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INDIA RUBBER WORLD

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INDIA RUBBER WORLD

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Progress in Compound-Room Practices

I. H. Richardson[1]

THIS is the second article in the series on the preparation and processing of rubber prior to fabrication, which was introduced under the title "Pellet Rubber" on page 35 of our June issue. The concluding article discussing the "Mill Room of the Future" will appear in our August issue. *Editor's Note.*

IN SIMPLE words, measuring powders and charging a mixer is usually a messy job, and this is true in any industry from kitchen to chemical, the compounding room in a rubber factory being no exception. This mixing or compounding of raw materials, particularly powders, has been too generally accepted as necessarily involving incorrectible conditions and has been neglected in the advance of the arts of manufacture. The problems represented are indeed difficult ones, but they are by no means hopeless.

Men of the rubber industry privileged to see the Farrel-Birmingham movie film at the American Chemical Society convention in April were reminded of the conditions which in former days prevailed in the typical compounding room. They were next shown what advances had already been made by the more progressive rubber manufacturers and, finally, what was inevitably ahead. There was projected a fantastic one-man mill room, with the operator performing his duties with accuracy and ease before his master control board. This so-called one-man mill room is in the distant future, but it will some day be attained by a series of relatively simple steps, many of which are already available.

The purpose of this article is to point out some of the progress which has already been made in the art of materials handling and weight control by some rubber manufacturers and by other industries. One of these developments leads to another, and with contributions from many sources the fantastic mill room of the future can become a reality. The most important recent contribution is the successful development of granular or pelletized rubber whereby this material can be blended, stored, conveyed, weighed, and finally fed to a Banbury mixer by completely automatic machinery. To be able to handle rubber like pelletized carbon black is definitely a major step toward the automatic mill room and simplifies other problems to follow.

[1] Vice president in charge of Chicago office, Richardson Scale Co., Clifton, N. J.

Pigment Storage

It has been said that mineral rubber can easily be stored in the large bins, but that dynamite is required to remove it. There is no denying this at the present time, but there will ultimately be a solution to the problems of its mechanical handling. For example, carbon black a few years ago could be described as "dirty wind", but now in granular form it will flow like sand in an hour glass; so the "impossible" can be accomplished if time and ingenuity are given a free hand.

Most of the other compounds still in powder form can be stored and handled with complete control. The method can be varied according to the requirements, but in the simplest form it is essential to have a scientifically designed bin and a flush-proof discharge valve or gate. These are available at virtually no greater cost than the monstrosities which have haunted our mill rooms since the turn of the century when the barrel and scoop were in vogue.

It is hard to understand the logic of some of the early bin designs. Bins were made with conical or hoppered bottoms even though an inverted cone is the most effective method for compressing a loose powder into a solid, immovable mass. To loosen this mass, the workman was provided with a poker to be used above and a sledge hammer below, and the bins were brutally scarred from the punishment they received. The regrettable part of this lies in the fact that many of the sledge hammer marks we see today are only a few hours old, and these marks, which are a record of wasted labor, also indicate wasted material and incorrect proportioning.

A bin may be full of material except for a small hole down the center when the operator opens the valve hoping to draw off his required 48½ pounds. He may use his

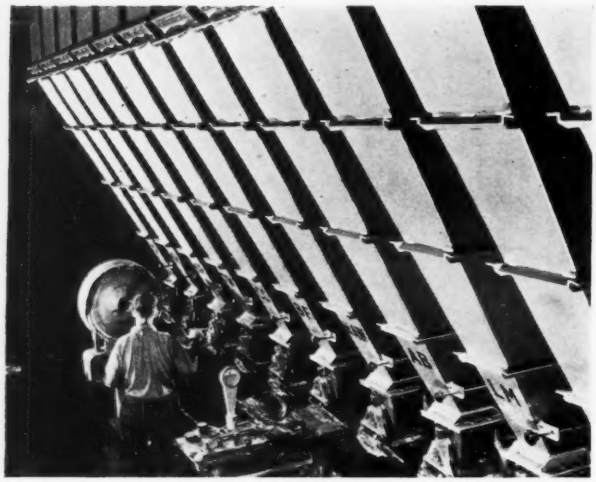


Fig. 1. Series of Well-Designed Compound Bins and Gates

hammer or possibly the poker, and suddenly a mass of materially tumbles into the hole from above, driving the air ahead of it like a piston in a cylinder. There is a mighty flush, and his tote box and the surrounding floor are covered from the deluge before he can close his valve and get the material under control. Conditions of this kind are extravagantly wasteful in material and labor.

Even more serious is the less spectacular flush of material when the operator, trying to get the last few pounds of pigment into his tote box, can get no more to flow. He hammers the bin and enough breaks loose to exceed his weight requirement. The excess to him is of minor importance, but the chemist may later find it necessary to condemn the entire batch.

Good tools are required to do good work, and scientifically designed compound bins and control gates are tools needed by the men responsible for accurate proportioning with a minimum of labor cost and material waste. (Figure 1.)

Space is not available here to discuss the details of good bin design, but it can be said that designs are available which have been proved to be successful under most adverse conditions. These bins should be completely sealed not only from within, but also from broken oil lines on the outside which might result in pigment contamination. At the top there should be conveniently arranged lids for filling from bags, (Figure 2) grids to catch an empty bag which falls from the operator's hands, suction lines to take the empty bags away, and vents to take the displaced air as the bin is filled. The shape of the bin must be such as to prevent packing of pigment as it becomes deaerated in storage with belled surfaces strategically located to encourage a uniformly descending level of material as it is withdrawn at the bottom. In place of the poker and sledge hammer, properly located compressed air jets can successfully agitate an otherwise dead mass, lubricating the inner walls of the bin so that plugging or "hanging-up" is entirely eliminated.

Below the bin, it is essential to mount a flush-proof gate which can be operated to restrict the size of the opening with a minimum of manual effort, but which will seal against any leakage as the result of surges which may follow the application of air agitation. The most satisfactory type of gate is of the arc or undercut type, having on all four sides a brush seal of multiple rows of bristles which are mounted in aluminum frames. Each gate is fitted with its own manually operated air valve plungers,

Fig. 2. Filling Compound Bins without Fear of Contamination

and the experienced hand knows where to apply the air within the bin to produce the most uniform discharge of material.

Manual Weighing

Such bins and control gates simplify the manual proportioning of pigments into the tram car with its pivoted collecting hopper mounted on conventional dial scale levers or into the tote box on its roller conveyer. The great majority of rubber plants will find this system of compounding most efficient for many years to come because it is inexpensive, flexible, clean, and labor saving. With the advent of rubber pellets more bins can be added, and the rubber drawn off as conveniently as any compounding ingredient. Conditions and requirements vary, but one operator should be able to feed two Banbury's running on a 12-minute cycle, and with the addition of automatic oil scales where the batch is reasonably repetitive, he is already approaching the job of head man in the one-man mill room for the small plant. But where a battery of Banbury mixers are to be served from one compounding room, the tram car or tote box system becomes more complicated, labor costs run higher, and greater possibility of error from the human element is experienced. Furthermore the greater volume of material handled in the larger plant will justify a larger investment in automatic equipment.

Automatic Weight Control

So much for the manual weighing of compounds from scientifically designed bins. The next steps are toward automatic compounding with a corresponding reduction of labor cost and the elimination of the error chargeable to the human element. Other industries are far ahead in their application of automatic weight control to their processes, but it must also be remembered that materials handling problems in a rubber factory are not so simple as can be found elsewhere. Multiple mixers have to be served with ever-changing formulas and the materials which must be stored, weighed, and fed to the mixers are distinctly difficult ones to handle. A year ago rubber pellets were virtually unknown, and rubber, the largest ingredient, had to be manually cut to weight as there was no other alternative; so it is not surprising that consideration of automatic weight control was delayed until there was a possibility of doing the whole job.

Many other industries have been able to do their entire proportioning job by automatic weighing machinery with substantial labor saving and vastly improved accuracy. For example, the modern glass plant of one of our largest automobile factories recently continued to roll a single

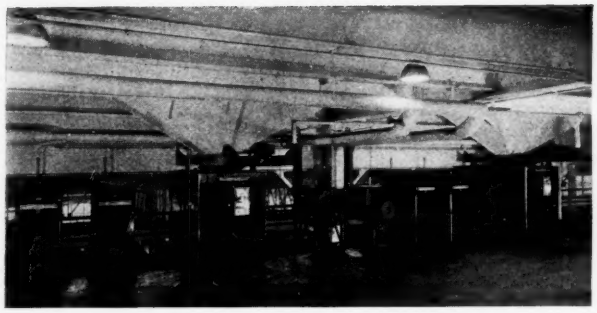


Fig. 3. Two Sets of Oil and Carbon Black Scales Automatically Serving Two Banburys on the Floor below

ribbon of plate glass without any interruption whatsoever for two years. This never ending ribbon would have stretched for 2,000 miles. Continuously operating automatic scales weighing, feeding, and blending the silica, soda ash, limestone, salt cake, etc., contributed substantially to this manufacturing record.

The world's largest distillery has for years been proportioning corn meal, rye meal, barley malt meal, and other ingredients by individual automatic scales, delivering them to any of eight large cookers according to formula and selection, all operating from a master control board.

A prominent cement manufacturer produces a special cement by a fully automatic proportioning of limestone, clay, flue dust, etc., this problem having been seriously complicated by the heat of the materials which averages 500° F.

These are only a few examples of modern automatic weight control which is so extensively employed, and these developments in other industries are becoming increasingly applicable to rubber manufacture. The first automatic scale to find a permanent place in the mill room was for carbon black after this material became available in granular form. This free-flowing black was easy to handle from bulk cars to storage, and gravity discharge from overhead bins (Figure 3) further simplified this application of automatic weighing. Scales (Figure 4) are provided with variable feed control whereby a weighing cycle cannot be started unless there is at least sufficient material ahead of the scale to complete the weighing cycle. A belt feeder delivers a uniform stream to the weigh hopper; this feeder stops automatically as the scale beam comes to a loaded balance. A discharge belt will deliver the weighed carbon black to the mixer at a prescribed rate and at the proper point in the mixing cycle as actuated by manual push button or cycle controller. Where bin segregation of the coarse and fine black causes irregular gravity flow, flush-proof screw feeders (Figure 5) are available to check possible material surge. Automatic dampers in the discharge pipe can be provided to retard back-pressure from the Banbury mixer which might otherwise be detrimental to weighing accuracy. All of this means that automatic weight control for carbon black has already been perfected, but the rubber industry in general has been cautious in pioneering beyond this simple stage. The notable exception is Ford Motor Co., the Dearborn plant of which has already been fully described in the June, 1938, issue of India Rubber World. This plant employed the best that was available in equipment for materials handling and automatic weight control and developed such items as could not otherwise be procured. The Russian Government has since followed suit and purchased much similar equipment from American manufacturers for shipment abroad (Figure 6), an indication

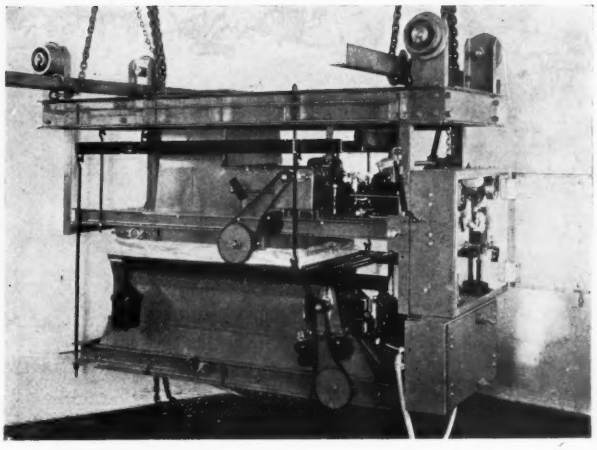


Fig. 4. Typical Automatic Carbon Black Scale without Its Outer Covers; Note the Feeding and Discharging Conveyers

that this pioneering is in the right direction.

There are a few outstanding features in the progress which has so far been made toward fully automatic compounding. The first of these is a successful live storage of pigments so that these materials are available when required by the system. This has been accomplished by the use of long, narrow, rectangular bins with vertical or even slightly belled sides. A live bottom is provided to each bin by a drag-chain conveyer which literally drags the most stubborn material out from under the mass above. This powered bin discharging conveyer (Figure 7) is free from troubles of flushing, surging, or arching because the bin sides are vertical and the mass must move down uniformly as the bottom layer is scraped out. This system is practical on all compounds which are used extensively with the exception of mineral rubber, which, for obvious reasons, cannot be stored in its usual state. It is unnecessary with granular black which will flow uniformly by gravity from hopper bottomed storage.

The bin discharging conveyer can best be controlled from its corresponding automatic scale which should be equipped with a pivoted surge hopper, shown in Figure 5 whereby a constant head of material is maintained. As

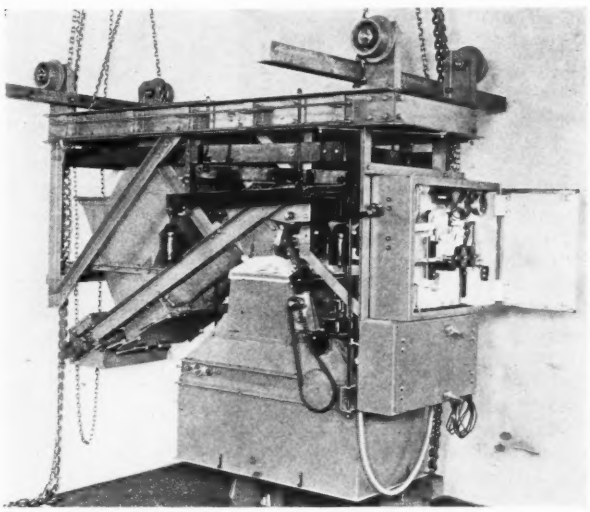


Fig. 5. Screw Feed Automatic Scale for Materials Which Flush; This Machine Handles Magnesium Oxide

this surge hopper becomes empty, it loses weight and pivots sufficiently to operate mercury switch controls, thereby starting the bin conveyer. As the surge hopper fills, it pivots back to its original position and the bin conveyer stops. Thus a constant head of material is automatically made available for the scale.

From the surge hopper the material is conveyed to the scale weigh hopper in prescribed quantity by either a belt feeder on sticky materials or a screw feeder where erratic surging or flushing of lively materials is a menace to accuracy. Discharge of the weighed pigment is in turn accomplished by a belt conveyer whereby the rate of delivery to the mixer can be perfectly controlled. This discharge can be made to occur at the required point in the cycle by a conventional mechanical or time-sequence cycle controller (Figure 8) which is also controlling the other scales and the various Banbury operations throughout the mixing cycle. As each scale completes its discharge, it should automatically take on its next weighing; so the operations can be repeated when required.

This equipment for storing, discharging, weighing, and

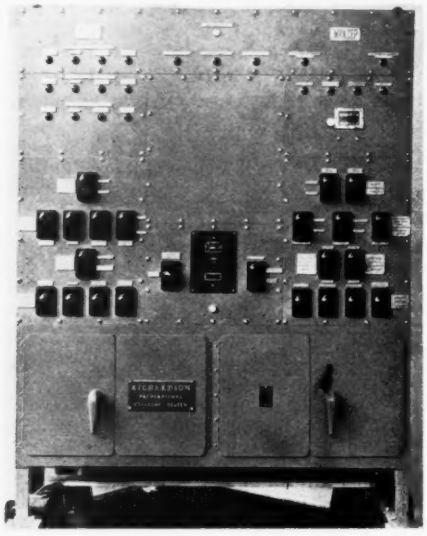


Fig. 6. Typical Master Control Panel for Automatic Compounding in Russia

feeding of compounds is ideally suited to the handling of rubber pellets and represents tremendous savings in both labor and floor space over the present arrangements for handling sheet rubber. (Figure 9.)

Entirely new to the materials handling field is the automatic liquid scale (Figure 10) which was designed solely for the weighing of relatively small quantities of oil to Banbury mixers. This machine has been a success in spite of the weighing problems originally met. The range of from one to twenty pounds was abnormally large for automatic weighing; a varying lead of oil would vary the velocity at which the oil entered the scale and so threatened the accuracy; the viscosity of Para Flux caused the liquid to hang back in the weigh tank; high temperatures had to be maintained which called for steam jackets, yet parts had to be accessible for cleaning and inspecting; these were but a few of the obstacles.

The double-beam system of weighing solved many of the problems, this being an arrangement whereby the scale would always fill up to a constant maximum weight and could thereafter be drained by the required number of pounds. With the maximum at 25 pounds it was only

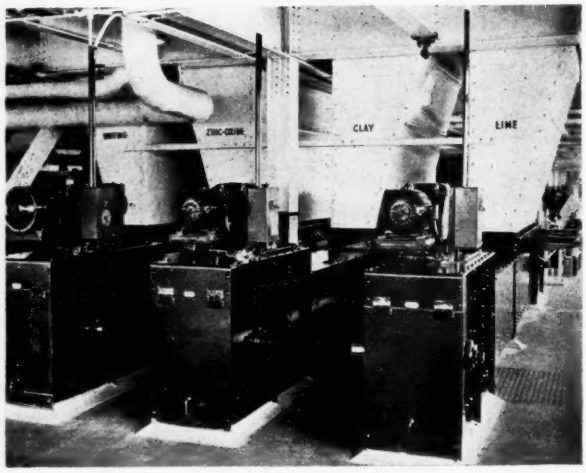


Fig. 7. Bin Discharging Conveyers for Feeding Corresponding Automatic Scales on the Floor below

necessary to weigh out until 24 pounds remained if the difference of one pound was required by the Banbury. Likewise, if 20 pounds were required, the scale would automatically weigh out until only five pounds remained, and any intermediate weight was thereby available according to the poise setting.

This weighing system eliminated the problem of draining the last few ounces of a sluggish moving oil from an otherwise empty weigh tank. Obviously the remaining level would be slightly higher or lower according to the degree of viscosity or the tendency of the oil to cling to the tank sides, but the delivered weight would be as required.

To obtain a constant head of liquid above the weigh tank without resorting to tiny floats, intermediate tanks were placed beside the scales and arranged to provide an under feed (see Figure 3). Thus as liquid tries to seek its own level, so a head of liquid in the scale always equalled the head in the larger intermediate tank where one float maintained the level for a series of scales.

Portable steam jackets and flexible steam lines maintain the required temperatures, and as these are evenly counterweighted, they can be raised for heating or lowered for accessibility with a minimum of effort and time.

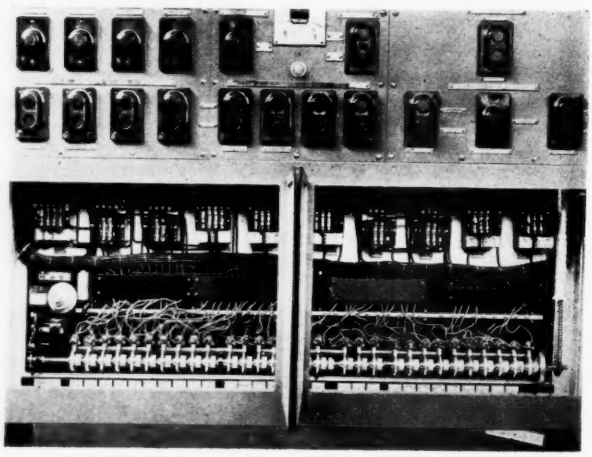


Fig. 8. Cycle Controller for Maintaining the Proper Sequence of 32 Operations including Automatic Scales, Conveyers, and Banbury Mixer

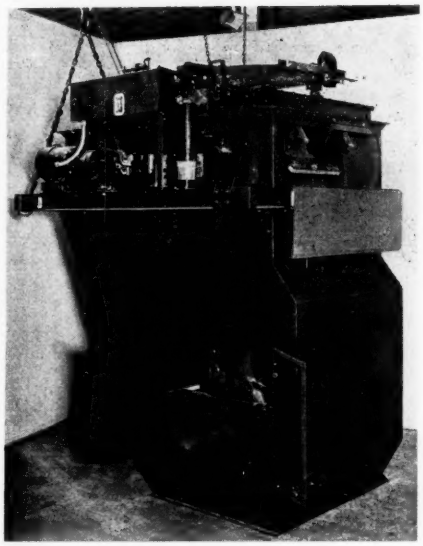


Fig. 9. Automatic Scale Designed to Handle Rubber Pellets

These essentials have all been perfected; bins, air agitation and gates, scales, controllers and steam jackets, all are available for the modern mill room, but other steps must be taken before the one-man mill room of the future can be made to work effectively. One of the problems will be to reduce the cost, particularly on automatic equipment for proportioning the very small quantities required in the compounding of mechanical rubber products. This will be difficult because of the lack in volume of repetitive business which is so necessary in cutting production costs appreciably. On the other hand, if pigment producers can pelletize the other materials in a similar manner to granular black, keeping the beads firm enough for handling, yet soft enough for dispersion, then much simpler and less expensive handling equipment can be used. In developing these granular pigments they must not overlook mineral rubber.

Another problem will be the remote changing of scale settings for corresponding changes in formula. This is being done successfully by other industries, but their problems are less complicated. For example, a modern distillery can vary the amount of corn or rye being delivered to the cookers by turning dials (Figure 11), causing a corresponding change in the setting of the scale poise on the floor above. They employ the multiple weighing principle so that a selected number of weighings of a selected quantity each will total the required batch to the last pound. Multiple weighings give a smaller scale unlimited total capacity, and a smaller scale is less expensive and requires less headroom and floor space. A similar system can be worked out for the mill room, but most probably it will be applied first to the materials which are used in larger quantities.

Changes in Banbury design are already under consideration whereby the number of operations will be reduced and dust virtually eliminated, but this is another part of the story of progress in compounding. It is sufficient to say here that progress is being made along many lines so that when cleaner, faster, and more efficient compounding methods are called for with an ever-increasing accuracy in weight control, the manufacturers of this equipment will be ready to produce it.

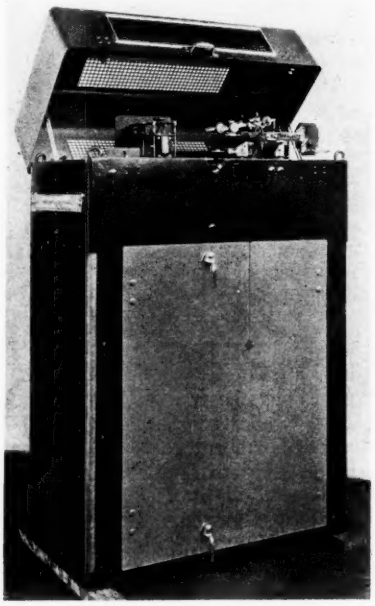


Fig. 10. Automatic Liquid Scale for Weighing Hot Oils to the Banbury

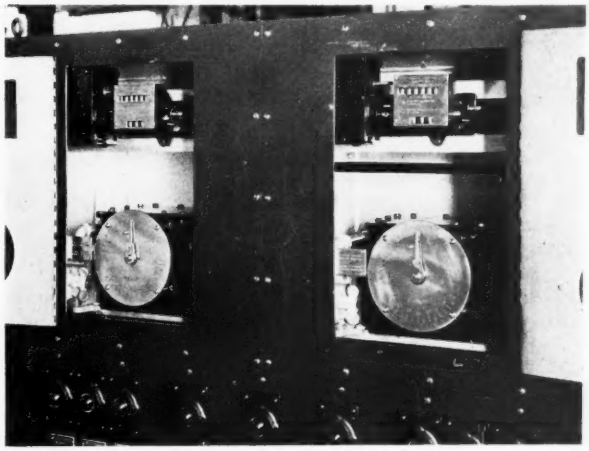


Fig. 11. Remote Control Station for Determining the Size and Number of Unit Weighings to Be Delivered from Distant Automatic Scales

Polyvinyl Alcohol Polarizes Light

Polaroid H-Glass, an invention of Edwin H. Land, president, Polaroid Corp., Boston, Mass., consists of laminations, in selected drawn glass, of a linear high-polymeric plastic containing oriented molecules which have been treated to render them light polarizing. In one process the polarizer is made by heating and stretching a sheet of solid polyvinyl alcohol until it is three to eight times its original length. This operation pulls the molecules into line. The sheet is then allowed to imbibe an iodine solution. The new H-type polarizer is said to polarize over 99.99% of all the light vibrations lying in the middle of the spectrum where the eye is most sensitive.

Coordination in the British Cable Industry

"Anglo"

THE Cable Makers Association has been in existence for many years and was instituted to maintain reasonable prices for cable and to prevent price cutting. Individual members had a free hand regarding quality and raw materials used.

In 1927 a considerable step forward was made by the formation of "Cable Research", which consisted of a number of firms who pooled their resources for the purpose of joint research in the general improvement and cheapening of cable products. The cost of the work involved would have been prohibitive for any one firm to undertake, and economy of time and money demanded coordination of effort. Consequently "Cable Research" was formed by the following C.M.A. members: British Insulated Cables, Ltd., Mackintosh Cable Co., Ltd., Callenders Cable & Construction Co., Union Cable Co., W. T. Henleys Telegraph Work, Ltd., W. T. Glover Co., Ltd., Connolly Bros., Ltd., Enfield Cables, Ltd., and St. Helens Cable Co., Ltd.,

A central office was opened with accountancy, production, and patent officers where the costs of production including material, labor, and overhead of the various members were tabulated. All patents were pooled. The scheme included equalization of profits, being based on the average over a number of years.

Owing to advantages obtained through coordination several works have been completely reorganized. While this was being done, the other members assisted with the manufacture, but the profit equalization scheme reduced or eliminated any expected drop in profits for the firms rebuilding or reorganizing.

Numerous committees were formed, the principal ones being: (1) finance and policy; (2) production; (3) rubber cable; and (4) engineering and plant design. Specific investigations and research were carried out by small sub-committees of specialists. As a result of their labors, cottons were standardized for braiding, lapping, and worming. The volume contents of raw rubber for cable compounds were laid down, and lead alloys specified for various applications. Length of lay was fixed for stranding, laying up, and braiding. The best economical speeds for all types of machines were decided upon, and new machines and processes investigated. Rationalization, a plan whereby certain firms would specialize in certain grades or sizes of cable and core and then distribute to other members, was tried, but owing to internal jealousies and complaints that firms could do their own work better, it was not considered desirable to carry rationalization out on a large scale. On the question of labor costs it was astounding to find such great differences between the firms even when the same types of machines were used. Some employed men, while others utilized youths or girls. Also the speeds of machines varied considerably. In the case of 3/029 taped and braided cable it was found that if the lowest cost from the several companies for each operation were combined, the total labor cost would be 2/7d. per 1,000 yards. The lowest cost for any one firm was 4/6d., the highest cost 6/6d., and the average 5/1½d.

Because of research and cooperation, during a period of three years labor costs were reduced by from 25 to 66%. Some very peculiar things came to light during these investigations. For instance one firm which had two lead press departments was found to take about two hours to change over on the lead press in one shop, while in the other it took a few minutes owing to quick change dies.

Considerable time was spent to determine the preference for zinc oxide or lithopone in cable insulation. Some firms had used lithopone successfully for years; while others stated they could not obtain good electrical tests from cable containing this pigment. One firm in particular insisted that lithopone was unsuitable for cable, but as it had a fine research department, the investigation was placed in its hands, the other members cooperating. Contrary to its previous statement, and to its credit, the firm furnished a report which stated that apart from slightly reduced tensile strength the electrical properties after exposure in damp and dry atmospheres were as satisfactory with lithopone as with various zinc oxides. Its use as a substitute for zinc oxide was, therefore, left to the individual members.

Generally speaking, the committees which made the greatest savings were "plant design", "rubber cables", and "paper cables", and there is little doubt that "Cable Research" was an excellent idea and justified by results.

The use of unvulcanized pure rubber next to the conductor is a thing of the past, and all government departments have fallen into line in eliminating this requirement from their specifications. Improved tinning of copper conductors, low sulphur compounds, and judicious use of accelerators and antioxidants rendered the use of the pure rubber layer unnecessary. Although the layer of rubber was called "pure", for some years it consisted of only 80 to 85% raw rubber, the balance being toughening agents and wax. The British Admiralty, by specifying cable insulated with vulcanized rubber only, was probably the means of bringing about this advance.

In Great Britain there is also the "Independent Cable Makers Association" consisting of several of the smaller firms, but they have had no technical cooperation, and they content themselves by agreeing not to sell below certain prices, which in ordinary times are about 20% below those of the Cable Makers Association. Some of the adherents to the I.C.M.A. price scheme were not too loyal regarding prices, and an attempt was made some time ago to introduce penalties for price cutting, but it was turned down by certain members.

All cable firms in Great Britain now are practically under government control, and it is really astounding how, under war conditions, "red tape" can be cut away and relaxation of specifications permitted. It may be expected that there will be vast changes in industry after this war.

THE UNITED STATES BUREAU OF THE CENSUS, Washington, D. C., in a report on the primary channels used by manufacturers of rubber boots and shoes in disposing of their goods, revealed that 40.3% of the rubber footwear made in the United States in 1939 were marketed by selling organizations owned and operated by the manufacturers; while 29.2% went direct to retailers for resale, and 18% to wholesalers and jobbers. Sales from point of production to commercial, governmental, etc., users amounted to 8.8% of the total 1939 output. Relatively small amounts were produced for export and for sale direct to consumers at retail.

Firestone Rubber Tie Plate[1]

T. W. Stedman[2]

CONSIDERABLE effort in recent years has been directed toward the isolation of vibration and shock through the use of rubber insulators of various types. Progress in this field has been accentuated by studies on the basic properties of rubber as an engineering material. It has been found that design, involving the hardness and modulus of the vulcanized rubber compound and the shape and size of the fabricated unit, is of foremost importance in the successful application of rubber for vibration and shock isolation, and this is no less true in the case of the Firestone rubber tie plate (Figure 1).

Design of the Tie Plate

The function of the rubber tie plate can be better understood by regarding the rail as a spring upon which the wheels of a train vibrate. In certain cases the vibration may become severe enough to lift the wheels off the rail during part of their revolution. After a wheel has left the rail, it will return with considerable impact. Thus the purpose of the rubber tie plate, acting as an integral part of the rail spring, is to dampen out the vibrations transmitted from the wheel and reduce shock from impact. Rubber is also particularly efficient in absorbing sound and high frequency vibration.

The Firestone tie plate is not merely a rubber block or shim, but is a composite product, designed specifically for reducing rail impact and vibration. As shown in Figure 2, a rubber unit, *A*, fits into a metal harnessing jacket or converted steel tie plate (*B*). This jacket confines the deflection of the rubber element and helps control the gage of the track. A specimen assembly of plate and rail is shown in Figure 2*C*. Figure 3 shows in detail the construction of the rubber tie plate, which comprises essentially a fabric reenforced rubber sole plate (bottom section), integrally molded and vulcanized to a superimposed rubber boss or rail seat cushion (top section).

The fabric incorporated in the surface laminations of the rail contact boss and in the lower laminations in the base of the sole plate is essential to the proper functioning and long life of the rubber tie plate. Fabric at these points minimizes scuffing action to the rubber surface under heavy vertical and lateral loads, and it also contributes to the stability of the tie plate.

As can be seen in Figure 2, *A* and *B*, the sole plate has spike holes which assure permanent registering to the harness jacket. The spike holes of the sole plate are slightly smaller in dimension than the holes in the metal harness jacket so that when the spike is driven, the rubber is forced into the jacket hole to create a seal around the spike and prevent seepage of water into the spike hole. The sole plate also tends to eliminate decomposition of the tie plate by insulating it from wet soggy ties. As a result of the insulating properties of the rubber, electrolysis is minimized on electrically propelled lines. Another contributing function of the sole plate is to reduce to the fullest extent the impact and vibrations which are transferred by reason of a lateral contact of the base of the rails with the shoulders of the harness jacket and which would otherwise migrate down into the ties and roadbed. The action of the tie plate also contributes to a uniform distribution of the wheel loads. It should be pointed out that if no fabric reenforcement were used in the sole plate, the rubber would extrude into cracks and fissures of the ties, resulting in cracks, cuts, and ultimate failure of the cushion element.

The tie plate is so designed that, when installed, the rail has some freedom of movement through the controlled deflection of the rubber. Through the canted top or bottom surface together with the graduated de-

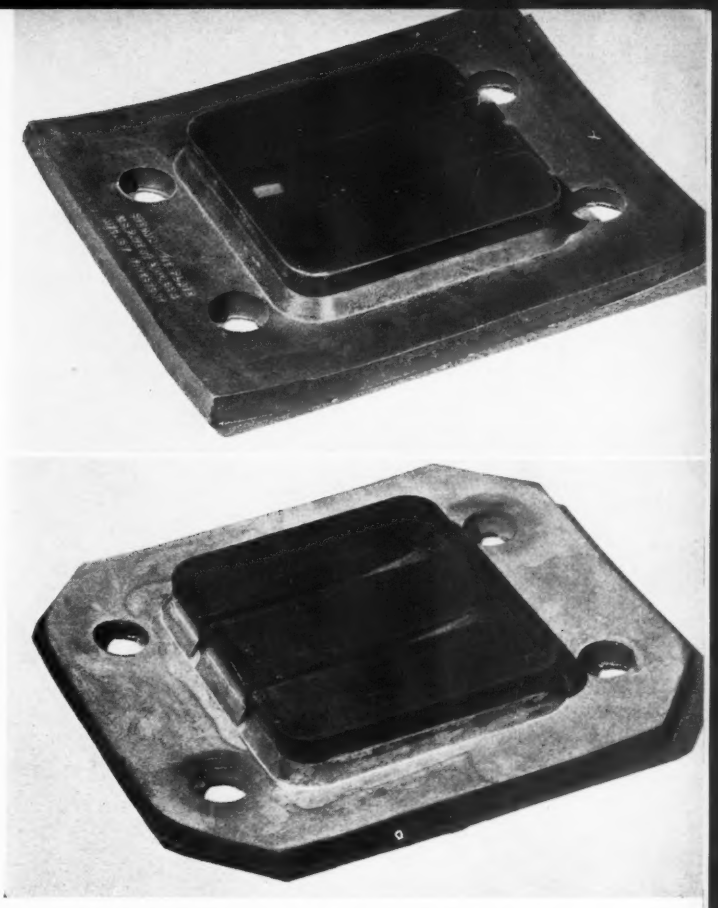
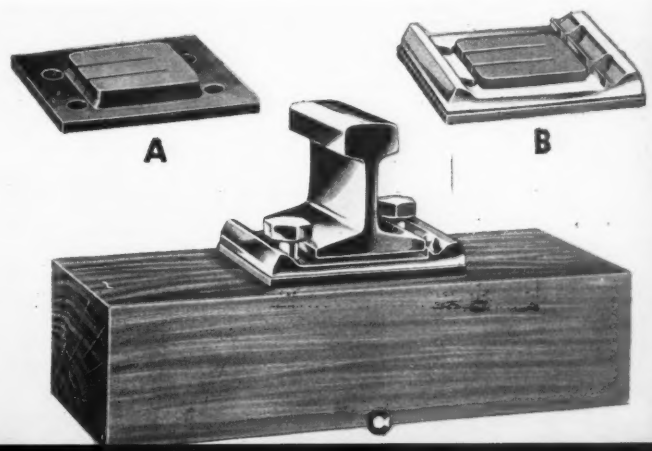


Fig. 1. Firestone Rubber Tie Plates, *(Top)* for Railroads, *(Bottom)* for Subways

Fig. 2. *(A)* Rubber Tie Plate, *(B)* Assembled Tie Plate and Harness Jacket, and *(C)* Specimen Installation



[1] Manufactured by the Firestone Tire & Rubber Co., Akron, O., and sold by the Railroad Division, Portable Plating & Equipment Co., 4707-15 W. 20th St., Chicago, Ill. U. S. patent Nos. 2,110,894 and 2,155,155 and others pending.

[2] Special Representative, Engineering Division, Firestone Tire & Rubber Co.

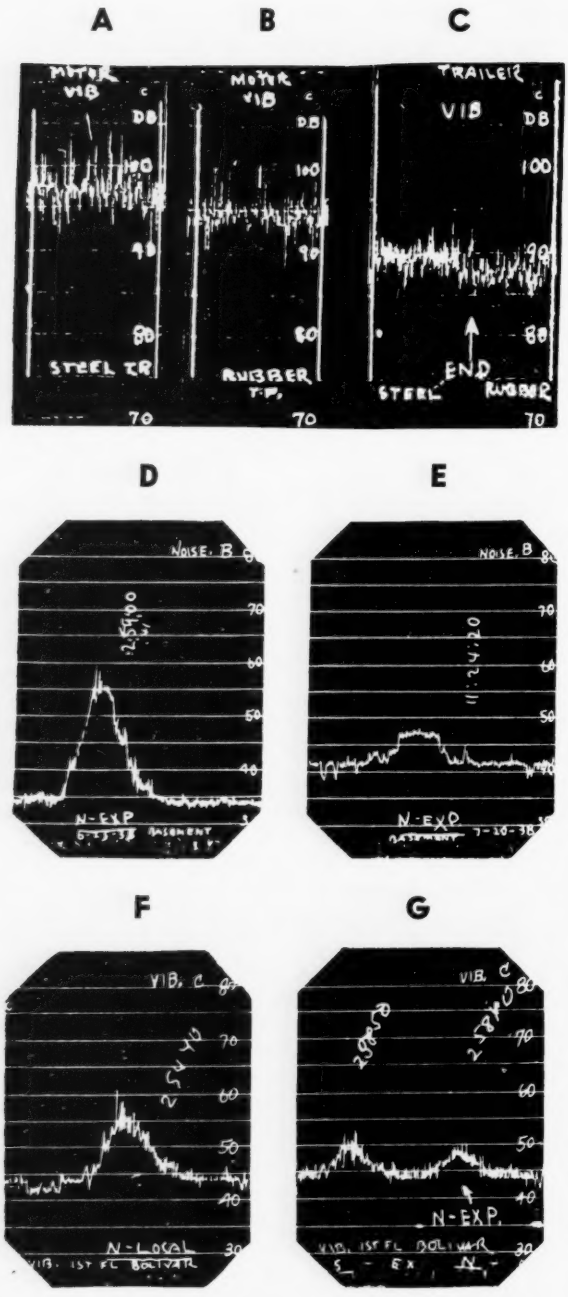


Fig. 4. Graphic Instrument Records of Vibration and Sound Tests on New York City Independent Subway, *(A)* Steel Tie Plate at Motor End of Subway Car (Vibration), *(B)* Rubber Tie Plate at Motor End (Vibration), *(C)* Steel Tie Plate *(Left)* and Rubber Tie Plate *(Right)* at Trailer End of Car (Vibration), *(D)* Basement of Adjacent Building before Installation (Noise), *(E)* Basement after Installation (Noise), *(F)* First Floor of Same Building before (Vibration), and *(G)* First Floor after (Vibration)

flection grooves in the rail seat cushions, the deflection characteristics are governed so that the weight of the train slightly closes the gage of the track. On the other hand the resiliency of the contact cushion permits an outward deflection of the rail where the gage is too narrow. Thus the overall effect is constantly to compensate for track misalinement resulting in a substantial reduction of "nosing" or whip action in the rolling stock.

The elevation of the rail contact boss above the steel harness jacket is predetermined by the maximum wheel load and size of rail, plus a safety factor. Also the clearances within the harness jacket are determined from load requirements. The design is such that with extreme vertical wheel loads, the displaced rubber rail seat completely fills up the harness jacket, but yet maintains a clearance between the rail and metal jacket.

Results Obtained from Installations

In dealing with the design and the functional characteristics of the tie plate, many of the advantages of its use became apparent. Here the broader aspects of the benefits derived will be discussed. The tie plate retards wear and tear on the rails through the absorption of wheel impact, reduction of vibrational stresses, and better distribution of wheel loads. Side gouging of rails is eliminated, and surface corrugations are retarded. Longer rail life in turn contributes to longer tie life because of less frequent respiking. More even distribution of load reduces tie crushing and abrasion.

The resilience of the tie plate measurably lessens impact between ties and ballast. This prevents the ties from pounding into the ballast and ultimately becoming "dead" or loose. For the same reason, impact and vibration are reduced on bridges, viaducts, and in tunnels, resulting in decreased maintenance costs and less noise. In cities and towns the migration of vibration and noise from roadbeds to adjacent buildings has been effectively reduced.

Test installations have shown that the tie plate is particularly effective in minimizing rail head corrugations on curves and has more than doubled the average life of rails used for this purpose. Minimizing corrugations has reduced wear on wheels and mechanical devices of locomotives and rolling stock and has contributed to improved riding comfort.

Because the friction between a steel rail and the rubber tie plate is much greater than between a steel rail and a metal tie plate, the tendency for rails to creep is definitely less, and anti-creepers have been found to be unnecessary on a number of installations. When rails expand or contract with temperature changes, the rubber

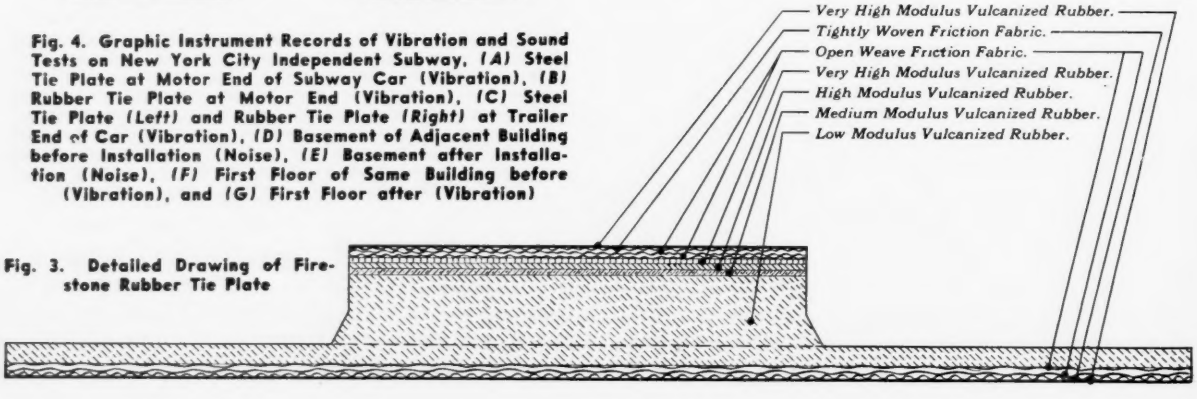


Fig. 3. Detailed Drawing of Firestone Rubber Tie Plate

tie plates will permit normal adjustment. Battered rail-ends, which are the result of impact of wheels jumping rail joint gaps, are minimized by the tie plate. The resilience provided at the rail joint permits the rail to "ride the punch."

Under conditions of normal loading or several times normal loading, there is no possibility of the rail hitting the steel harness jacket. If under excessive loading the rail should contact the metal harness, any impact would be absorbed because the harness jacket itself rests on a substantial thickness of rubber.

Sound and Vibration Tests

In order to determine the efficiency of Firestone rubber tie plates a series of sound and vibration tests were made during 1938 in connection with an installation on one mile of express track on the Independent Subway System of the Board of Transportation of the City of New York. The nature of the vibratory problem in this case depends on the following primary sources of vibration and noise: impact of irregularities between wheel and rail; gear transmission between motor and driving axle; and contact between brake shoe and wheel during operation of brakes. Secondary sources include the rattle of windows, doors, draw bars, etc. In this study measurements were made on a subway car, in an adjacent building, and in the steel columns supporting the tracks

Noise was picked up with a microphone of a calibrated sound level meter and recorded by a sound level recorder directly in decibels on a constant speed tape. Vibration levels were measured with the same instrument, and the decibel levels obtained for a particular frequency were converted into displacement amplitudes by the use of a calibration chart for the instrument.

Noise recordings, limited to the audible frequency range of 25 to 5,000 cycles per second, were made before and after installation. Vibrations below 25 cycles per second, which are important in regard to stresses in track and rolling stock, were measured only after installation. Consequently the vibration changes in the treated track were compared with untreated tracks.

While a detailed account of the results of this study is not within the scope of this article, several charts are shown in Figure 4 to indicate the benefits obtained from the installation. The charts *A* (steel tie plate) and *B* (rubber tie plate) were recorded for the motor end of a subway car, while traveling at a speed of 50 miles

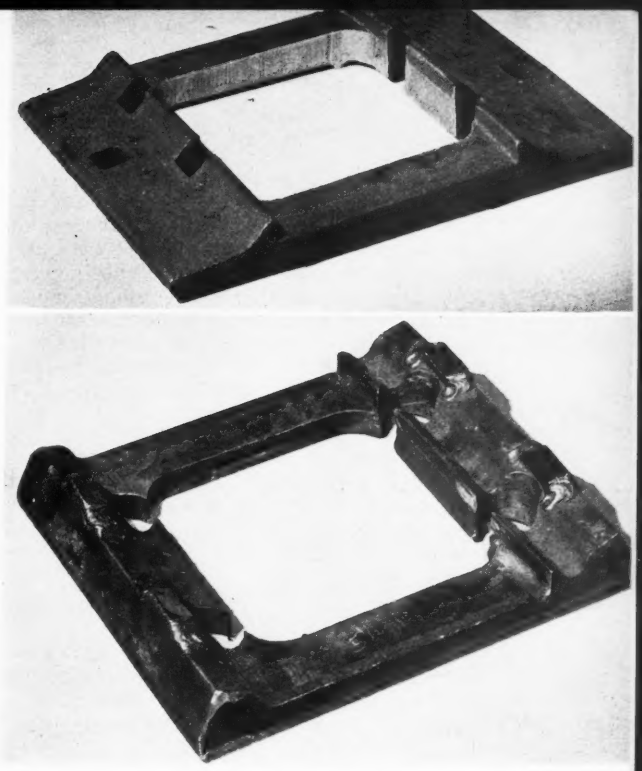


Fig. 9. Flame Converted Steel Tie Plates *(Top)* Railroad Type and *(Bottom)* Subway Type

Fig. 8. Completed Installation

Fig. 5. Rubber Tie Plates in Metal Harness Jackets Laid Out for Installation

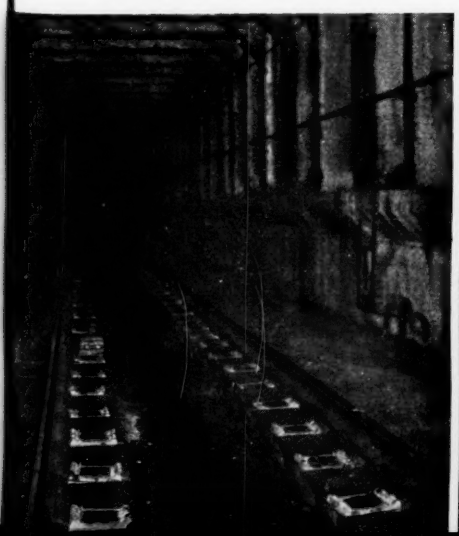


Fig. 6. Installation of Tie Plates

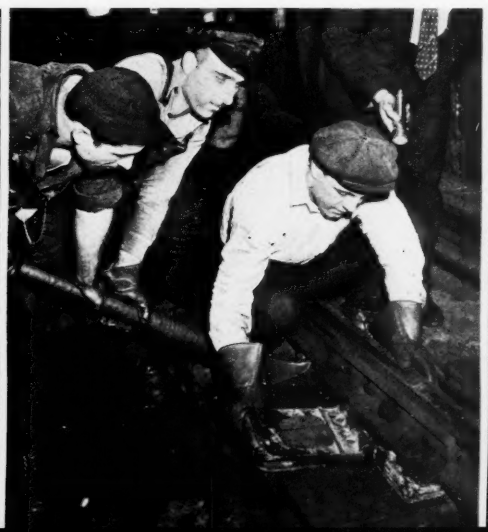


Fig. 7. Screwing in Spikes

per hour. In this case the vibration for the motor end dropped from an average of 97.5 to 94.5 decibels, or a decrease of 3.0 decibels. The vibration for the trailer end as shown in *C* (*left*, steel, and *right*, rubber) dropped from an average of 90.0 to 87.4 decibels, or a 2.6 decrease. Charts *D* and *E* are records of sound levels in the basement of an adjacent building taken before and after installation of rubber tie plates, respectively. Charts *F* and *G* were taken on the first floor of the same building, before and after installation, respectively. The decibel decrease for the adjacent building (first floor and basement) averaged 11.4, which is equal to a reduction of 92.8% in sound power or 73.1% reduction in sound pressure. An analysis of the change in vibration levels resulting from the rubber tie plates showed an average reduction of 65% in vibratory forces or 87.4% in vibratory power.

Installation of Tie Plates

Installation of rubber tie plates is essentially the same as in the case of steel plates; the rubber plate with its metal jacket is substituted for the metal plate.

The Firestone plate can be adapted for either cut spikes or screw spikes. Figures 5, 6, 7, and 8 depict the installation procedure followed and the finished job. For rail joints a rubber plate of similar type, but of different dimensions is used.

With square cut or sawed ties, further smoothing of the surface is not required as the rubber sole plate will readily adjust itself to any minor irregularity in the surface of the tie.

The metal harness jacket used with the rubber tie plate is essentially a metal tie plate with a hole in the center to accommodate the rubber rail seat cushion. Thus present metal tie plates can be converted into harness jackets (Figure 9) by cutting out the center with an oxyacetylene flame as shown in Figure 10. Suitable cutting templates are used to aid in this work.

Present Installations

Firestone tie plates have been in actual service in experimental installations for seven years. Some have been removed recently for inspection and testing. There were no signs of imminent failure, and tests showed them to have lost less than 2% of their original physical characteristics. The probability of 15 years or more useful life seems to be a reasonable expectancy. In connection with the permanent set of the rubber, it should be pointed out that "working" the rubber or subjecting the rubber tie plate to wide fluctuations of load minimizes the compression set to a negligible degree.

There are now 25 to 30 installations upon various railroads and in subways. In the case of one subway alone, over 100,000 plates are in use. An average of 5,800 tie plates are used per single track mile. The potentialities of this use of rubber can be visualized from the fact that there are approximately 225,000 miles of track under operation in this country alone.

Rubber has found other similar applications. For example, ordinary rubber pads have been used under switches and crossings for many years to reduce wear from impact and vibration.

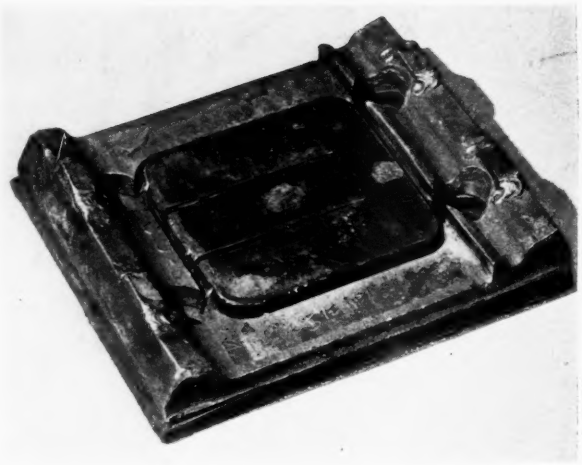


Fig. 1. Firestone Tie Plate Assembly after Six Years of Service on a Sharp Curve in the New York Subway

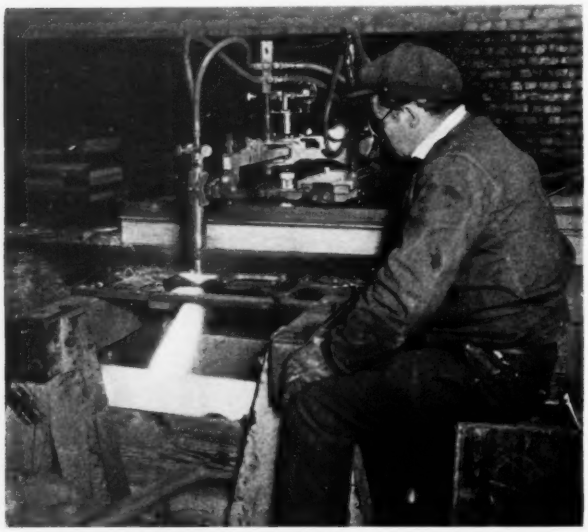


Fig. 10. Flame Converting Metal Tie Plate into Harness Jacket

Inflammability of Butadiene

Results of an investigation on the explosive hazards of butadiene are set forth in a report entitled, "Limits of Inflammability of Butadiene in Air" (R. I. 3565, Bureau of Mines) by G. W. Jones and R. E. Kennedy. A Bone-Wheeler gas-analysis apparatus was used in analyzing the butadiene-air mixtures for the tests. In carrying out the tests samples were ignited by a flame in a tube six feet long and two inches in diameter. Based on the definition of inflammability, only those mixtures of butadiene and air which caused the flame to propagate through the entire length of tube were considered to be inflammable. The limits of inflammability of butadiene by volume in air at laboratory temperatures and pressures were found to be 2% for the lower and 11.5% for the upper limit. The flame did not propagate entirely through the mixture in the case of concentrations below 2% and above 11.5%. A copy of this report, which contains a description of the method employed and a tabulation of results, may be obtained from the Bureau of Mines, Washington, D. C.

German Patents Relating to Synthetic Rubber-like Materials—IX

Law Voge[1]

SINCE the search was made of the German patents last year for inventions relating to synthetic rubber-like materials based upon butadiene compounds and, in German patent office parlance, known as Class 39b, Group 4.01, published in INDIA RUBBER WORLD during 1940,[2] a number of additional patents have been granted in this class. As the most recent developments of this branch of the German synthetic chemical industry, these six patents are presented in their entirety and complete the analysis of German patents issued to date under Class 39b, Group 4.01. *Editor's Note.*

In July, 1934, Haeubner and Winckler applied for patent,[3] assigned to the I. G. Farbenindustrie, A.G., on "Preparation of Tough Elastic Substances." The translation of this patent follows:

"It has been discovered that tough elastic substances are obtained if there are subjected to reaction with boron trifluoride the liquid products containing appreciable amounts of cyclic diolefines and generated by thermal splitting-off (or scission) from gaseous methane homologs. These products prove very satisfactory for rubber filler in place of factice, etc., yielding products with especially good properties. Milling work is also much lessened.

"It had previously been proposed to subject benzene, derivable likewise from methane homologs by thermal treatment, to the action of aluminum chloride, but very different products result from those of this invention. In another well-known process, cracking distillates containing cyclic diolefines are polymerized with $AlCl_3$, but the products are not tough and elastic, but hard and brittle and not appropriate as rubber fillers.

"*Example*: in the cracking of propane to produce propylene and ethylene in a steel tube coated with silicon, at an external temperature of 800 to 850° C., there is obtained 2 to 4% of liquid products which begin to boil at room temperature and of which 90% passes over up to 200° C. These products are characterized by a high content of cyclic diolefines.

"Into 1,000 grams of these liquid products placed in a circulatory vessel and cooled by a reflux condenser some 30 grams of boron fluoride are slowly introduced. Then, with stirring, the temperature, over a period of four or five hours, is raised to 40 to 50° C. After cooling the reaction products are thoroughly washed with water. There is obtained a brownish, tough, non-tacky substance which, after working on mill rolls, exhibits compression elasticity.

"The possible use of this polymerizate is indicated by comparing it with factice. The following two comparative compounds were vulcanized at 143° C. for 45 minutes.

	Parts by Weight	
	a.	b.
Crepe rubber	100	100
Factice	25	..
Polymerizate	..	25
Zinc oxide	10	10
Magnesium oxide	10	10
Sulphur	3	3
Diphenylguanidine	2	2
Aldol-alpha-naphthylamine	1	1

"The tests of the vulcanizates gave, before and after 64-hour aging at 70° C. in an air current, the following values:

		Strength			
	Mixture	Kg./Sq. Cm.	(Lbs./Sq. In.)	Elongation	Elastic Recoil
Before Aging	a. With Factice	51	(725)	680	32
	b. With Polymerizate	161	(2,290)	597	41
After Aging	a. With Factice	54	(768)	636	34
	b. With Polymerizate	155	(2,200)	568	44

"The polymerizate confers much higher strength and elasticity values than does the factice.

"*Claim*: Preparation of tough elastic substances characterized in that the liquid products containing appreciable quantities of cyclic diolefines produced by the thermal splitting-off of gaseous, methane homologs, are subjected to the action of boron fluoride."

In January, 1936, application had been made in America and filed in Germany in January, 1937, for patent[4] on the "Preparation of a Mixture of Chloro-2-Butadiene-(1,3)-Rubber" by Emil Ott, of Wilmington, Del., and assigned to the Hercules Powder Co. This patent is equivalent to United States patent No. 2,138,192, and as it is not a German invention, it requires no further discussion in this supplement.

Dr. Otto Baechle assigned to the I.G. in April, 1936, an application for German patent[5] on a "Process for Improving the Workability and Solubility of Rubber-like Polymerizates of Butadiene." The translation of this patent follows:

"The present invention concerns a process for the improvement of the workability and the solubility of rubbery polymerizates of butadiene or of mixed polymerizates of the same with other polymerizable substances (acrylic and vinyl compounds) by the emulsion process. The process is characterized by the introduction into the above-mentioned polymerizates, before working up, of small amounts of asymmetric derivatives of hydrazine. . . . As effective hydrazine derivatives may be mentioned: phenylhydrazine, nitrophenylhydrazine, amino-phenylhydrazine, tolylhydrazine and its corresponding derivatives, salts of phenylhydrazine with organic acids such as phenylhydrazine oleate, and, furthermore, double compounds of phenylhydrazine with inorganic acids.

"For the attainment of the effect additions of but 0.1% of the hydrazine derivatives on the synthetic rubber suffice. The amount actually necessary depends upon the working conditions. The hydrazine derivatives can be added to the rubber mixture during milling or to the emulsion-polymerizate, as it assumes the form of a latex. In the latter case it is advisable subsequently to blow oxygen or air through and optionally to even add oxygen-yielding heavy metal compounds.

"The action of the above-mentioned additions is shown in that the polymerizates become plastic and flowable on the rolls. As is known, the lack of a masticating effect is one of the considerable differences between synthetic and natural rubber. As this characteristic in the working up frequently becomes very disadvantageous, the masticating

[1] Research chemist and engineer, Washington, D. C.
[2] Apr., pp. 48-50; May, pp. 47-49; July, pp. 45-46; Aug., pp. 43-44; Sept., pp. 41-44; Oct., pp. 41-42, 48; Nov., pp. 39-40, 46; Dec., pp. 53-55.
[3] No. 695,135, granted Aug. 17, 1940.
[4] No. 701,038, Jan. 9, 1941.
[5] No. 702,209, Feb. 1, 1941.

effect obtained by the addition of hydrazine derivatives must be considered considerably improved technique.

"Furthermore, the vulcanizates of rubbers treated with phenylhydrazines show a considerable improvement in elongation. The above-mentioned plasticizing action can also be utilized by giving to polymerizates of the cited type adhesive surfaces by brushing with the above-mentioned hydrazine derivatives. Hereby the fabrication of the product is simplified.

"Parallel with the plasticizing action there is an increase in solubility of the polymerizate so that it is now applicable for the preparation of solutions. It is known that asymmetric derivatives of hydrazine exert a softening action on natural rubber which aids in its solution. That their use with synthetic rubbery products would cause a similar action was not to be expected. For the most part the action of asymmetric hydrazine derivatives on synthetic rubbery products exceeds the action exerted on natural rubber.

"*Example* 1: the mixed polymerizate derived from the emulsion-polymerization process, from about 80% butadiene and about 20% acrylonitrile is insoluble in organic solvents such as benzene. With the addition of 1% of phenylhydrazine, based on the amount of mixed polymerizate used, and added on the rolls, solution in benzene is attained in a short time.

"If the product is masticated with the addition of 1% of phenylhydrazine on the rolls, it becomes tacky and soft. The same results are accomplished by employing nitrophenylhydrazine, phenylhydrazine oleate, and tolylhydrazine. If the butadiene-acrylonitrile polymer is replaced by other polymerizates, e.g., one prepared by the emulsion process from styrol and butadiene, the same solvent and softening effects are attained by adding the above-mentioned phenylhydrazines.

"*Example 2*: a latex of synthetic rubber which has been prepared by emulsion polymerization of 75 parts by weight of butadiene and 25 parts by weight of acrylonitrile is mixed with 1.2% by weight of phenylhydrazine calculated from the weight of the rubber and in ten times the quantity of benzene. Then the whole is heated to 60° C. for 24 hours with continuous stirring and injection of air. The rubber so treated becomes benzene-soluble, and its vulcanizates show as compared with untreated material, considerably improved elongation for almost identical strength.

"*Example* 3: a latex of synthetic rubber which has been prepared by emulsion-polymerization from 75 parts by weight of butadiene and 25 parts by weight of acrylonitrile is mixed with 3.3% by weight of phenylhydrazine on the rubber and in 10 times the quantity of benzene, and heated for 24 hours at 60° C. while stirring and with simultaneous injection of a moderately strong current of air. The rubber so treated (with phenylhydrazine) shows a considerable improvement in workability. The same mixture, after addition of 0.08% of potassium ferriarabonate, calculated from the weight of the rubber and under the same experimental conditions, yields a still more plastic product. Regarding relative viscosities: that of the rubber treated only with air in benzene solution is 9.3; that of the polymerizate subsequently treated with air and potassium ferriarabonate is 4.5.

"*Example* 4: The mixed polymerizate derivable by the emulsion-polymerization process from about 60% butadiene and 40% styrol is difficultly soluble in organic solvents such as benzene. After addition of 1.5% of naphthylhydrazine calculated against the weight of the mixed polymerizate used, a solution is formed in a short time. On masticating the same polymerizate after addition of 1.5% naphthylhydrazine, the substance quickly becomes plastic and sticky. On substitution for the above-mentioned mixed polymerizate, another polymerizate, e.g., with one of butadiene and acrylonitrile, the addition of the specified naphthylhydrazine produces the same solubilizing and plasticizing effects.

"*Claim* 1: Process for the improvement of the workability and solubility of rubbery polymerizates of butadiene or of mixed polymerizates thereof with other polymerizable substances, characterized in that to these are added before or during the working-up, small amounts of asymmetric derivatives of hydrazine, i.e., such in which but one amino group has been replaced.

"*Claim 2*: Form of execution of the process according to Claim 1 characterized in that the addition of the hydrazine derivative to the polymerizate in emulsion form is accomplished advantageously with injection of air or of oxygen and optionally together with the addition of oxygen-transferring heavy metal salts."

Drs. Hagen, Dennstedt, and Becker assigned to the I.G. application for German patent[6] in December, 1936, on "Stabilization of Unvulcanized Synthetic Rubber." The translation of this patent follows:

"The present invention concerns the stabilization of synthetic rubber. The process, according to the invention, is characterized in that unvulcanized rubbery polymerizates of butadiene, its alkyl- or chloro-derivatives, or their mixed polymerizates with other polymerizable substances have incorporated in them, before their storage in unvulcanized condition, small amounts of sulphides or polysulphides of alkyl phenols.

"Synthetic rubbers of the characterized type tend to become tacky and to cyclize. This often results in an eventual hardening of the product and lowers the workability; furthermore the elongation elasticity is lessened for the vulcanizates. Another undesirable property of the above-mentioned synthetic rubbers lies in their tendency to oxidize under the influence of atmospheric oxygen.

"It has already been proposed to avoid this disadvantage through the addition of stabilization agents. As such there have been proposed, among others, especially secondary amines, multivalent phenols, aldehyde-amine condensation products, e.g., aldol-alpha-naphthylamine. All of these stabilizers, however, introduce the disadvantage that they injure the light-fastness of vulcanizates. Owing to the inherent property of discoloration under the influence of light, they do not permit the preparation either of pure white vulcanizates or of fast-colored vulcanizates. A product which, on the one hand, shows a sufficient stabilization action and, on the other hand, causes no discoloration of the vulcanizate under the influence of light has not previously been known.

"In the sulphides of the alkyl phenols a medium has been found which satisfies both conditions, that is, exerts a sufficient stabilizing action and has no tendency to cause discoloration. Preferably sulphides of the para-alkyl phenols are used. The term 'sulphide' defining the sulphur-bridge between two alkyl phenol radicals can be either a monosulphide of polysulphide. Preferably disulphides are used. The alkyl phenol radicals can, of course, contain still further substituents. The essential action of the stabilizers mentioned rests in the fact that they permit the preparation of lighter-colored vulcanizates and in these cause no discoloration. In the other properties such as stabilization or aging-protection they are not less efficient than the best-known stabilizers such as phenyl-beta-naphthylamine. The properties of the new stabilizing reagents are in general evident from the following examples, wherein it is to be noted that usually between the addition of the stabilizer and the preparation of the vulcanization-mixture, 24 hours have elapsed.

"The above-mentioned stabilizing agents can be used

[6] No. 702,210, Feb. 1, 1941.

in combination with the most varied synthetic rubbers, e.g., polymerizates of 1,3-diene hydrocarbons, polymerizates of substitution products such as 2-chloro-butadiene, or mixed polymerizates of butadiene with styrol or butadiene with acrylonitrile. The mode of preparation of the polymerizate is immaterial. The new stabilizers can be added to the synthetic rubbers at any stage of the process. The incorporation can be performed on the polymerizate in latex form as well as on the vulcanizates.

"*Example* 1: a rubber, made by emulsion-polymerization from a mixture of butadiene and acrylonitrile, was worked up as follows: (1) without stabilization; (2) with addition of 3% 'di-(tertiary amyl phenol)-disulphide'; and (3) with addition of 3% phenyl-beta-naphthylamine. A 10% benzene solution of the disulphide or the amine was added to the latex, which finally was precipitated with salt. The three samples of the same rubber thus obtained were made into the following mixture and vulcanized: polymerizate 100 parts, gas carbon 40 parts, tar distillation residue (trade name: Kautschol) 10 parts, zinc oxide five parts, sulphur one part, 'benzothiazyl-2-sulphene-diethylamide' one part. Vulcanization: 40 minutes at 2.1 atmospheres above atmospheric pressure. The physical data of the three vulcanizates show the following values:

	Strength			Permanent		Load Kg./Sq. Cm. at 300%	
Sample	Kg./Sq. Cm.	(Lbs./Sq. In.)	Elongation	Elongation	Elasticity	Elongation	Hardness
1	143	(2,030)	275	8	25	..	78
2	302	(4,300)	610	12	33	78	70
3	265	(3,770)	510	10	33	95	74

"From the data it is clear that the unstabilized rubber in the vulcanizate has no serviceable value for strength, elongation, elasticity or hardness, and it is not possible to obtain the modulus at 300% elongation. This impairment of physical properties is prevented by both stabilizers, according to Samples 2 and 3 wherein the lower modulus (78) for 2 indicates an improved stabilization over 3.

"*Example* 2: the same experiment was repeated with a mixed polymerization product of butadiene and styrol that had been prepared in emulsion. The same result occurred, as is evident from the following figures:

	Strength			Permanent		Load Kg./Sq. Cm. at 300%	
Sample	Kg./Sq. Cm.	(Lbs./Sq. In.)	Elongation	Elongation	Elasticity	Elongation	Hardness
1	104	(1,480)	220	13	20	..	77
2	230	(3,280)	765	25	34	31	70
3	241	(3,430)	800	26	33	35	69

"*Example* 3: to test the discoloration by light of a white vulcanizate, vulcanizates were prepared from an emulsion-polymerizate of butadiene with styrol following the above three conditions and using the following mixture: polymerizate 100 parts, zinc oxide 10 parts, titanium dioxide 10 parts, sulphur 1.5 parts, 'benzothiazyl-2-sulphene-diethylamide' 1.5 parts, stearic acid two parts. Vulcanization: 60 minutes at 2.5 atmospheres above atmospheric. No usable, i.e., pore-free, material could be obtained from the unstabilized substance. Vulcanizates 2 and 3, as prepared, were both white. The color changes through exposure to a 1,000-watt light at a distance of 40 centimeters are shown in the table.

	Illumination Period (Hours)			
Sample	22	48	110	170
2	White	White	White	Slightly Yellowed
3	Grayish Brown	Brownish Black	Black	Black

"*Example* 4: a synthetic latex obtained by emulsion-polymerization of 75 parts by weight of butadiene and 25 parts by weight of acrylonitrile was in one instance worked up without addition of a preservative and in another instance with addition of 3% cresol sulphide (prepared from one mol of a crude cresol and 1.1 mol of sulphur dichloride), added in the form of a dilute solution in caustic soda. The product supplied with a preservative, after vulcanization, yielded appreciably better values as regards strength, elongation, and elasticity than did the unpreserved product. A similar result was obtained by replacing the cresol sulphide with xylenol sulphide.

"*Example* 5: a synthetic latex prepared by emulsion-polymerization of 2-chloro-butadiene was worked up in one instance without preservative and in another instance with the addition of 3% di-isobutylphenol sulphide stirred in, in the form of a 10% solution, in benzene. The product worked up with the preservative showed appreciably better rubber properties than the unpreserved one.

"*Example* 6: the experiment described under Example 1 was repeated using the same amount of a sodium polymerizate of butadiene. The values after vulcanization under the conditions described in Example 1: (1) without stabilization; (2) with addition of 3% 'di-(tertiary amyl phenol)-disulphide'; and (3) with addition of 3% phenyl-beta-naphthylamine, are shown in the following table:

	Strength			Permanent		Load Kg./Sq. Cm. at 300%	
Sample	Kg./Sq. Cm.	(Lbs./Sq. In.)	Elongation	Elongation	Elasticity	Elongation	Hardness
1	65	(925)	130	5	15	..	85
2	120	(1,710)	740	22	40	45	75
3	125	(1,780)	730	20	41	50	74

"*Claim*: Process for stabilization of unvulcanized rubbery polymerizates of butadiene, its alkyl- or chloro-derivatives or of mixed polymerizates of the same with other polymerizable substances characterized in that the specified substances before their storage in unvulcanized condition have incorporated in them small amounts of sulphides or polysulphides of alkyl phenols."

A "Process for the Preparation of Polymeric Carboxylic Acids and Their Derivatives" invented by Dr. Karl Hamann, was assigned to the I.G.;[7] the application was dated June, 1937. Austrian protection of this patent is included. Its translation follows:

"The transformance to industrially valuable polymerizates is known of acids of the type of crotylidene cyanacetic acid, 2-cyanhexadiene-(2-4)-acid, as well as their derivatives, such as their esters, by reaction with bases or with substances which react alkalinely in aqueous solution.

"While in this process changes in temperature, the amounts of catalysts used, or the amount of the diluent-agent are without noticeable effect on the degree of polymerization of the product obtained, products of graded degree of polymerization can be obtained if the above-indicated polymerization of the acids of the type of crotylidene cyanacetic acid, as well as their derivatives and especially their functional derivatives such as their esters or amides, is undertaken in the presence of substances having active methyl-, methylene-, or methine-groups. Among the appropriate bases for polymerization catalysts are, for instance, piperidine, diethylamine, triethylamine, as well as caustic alkalis, alkali metal carbonates, alkaline earth hydroxides, etc., when supplemented by buffer mixtures such as the well-known phosphate buffer mixture. Among the substances with active methyl-, methylene-, or methine-groups[8] which are appropriate for affecting the degree of polymerization, are, for instance, acetylacetone, cyanacetic ester, malonic ester, dinitrile, malonates, acetoacetic ester, and alpha-cyancrotonate. Even small additions of the mentioned materials suffice to secure the action mentioned, for instance, additions of from 0.01 to 10%.

[7] No. 696,243, Sept. 16, 1940.

[8] See in this connection Paul Karrer's "Lehrbuch der Organischen Chemie," 4th Ed. (1936), p. 161, and French patent No. 737,337, p. 1, lines, 1-14.

"In the following example the degree of polymerization of the product obtained is characterized by the K-value determined by the method of Fikentscher.[9] *Example*: eight parts by weight of sodium hydroxide and eight parts by weight of crotylidene cyanacetic acid were dissolved in 2,500 parts of water. After standing for six hours there was allowed to flow into this solution, while actively stirring, an emulsion of 300 parts by weight of the butyl ester of the crotylidene cyanacetic acid, alone or with the addition of the substances cited below and with 20 parts by weight of a neutrally reacting emulsifier with 300 parts of water. The polymerizate separates in pearl-like aggregates and is washed in sequence with 1% caustic soda solution, 3% sulphuric acid, and twice with water.

"The following table presents the K-values of the polymerizate obtained using no addition and with various additions and with various proportions of them:

Additions	K-Value of the Polymerizate Obtained
Without addition	99 - 101
0.2% ethyl cyanacetate	78
1.0% ethyl cyanacetate	64
1.2% ethyl acetacetate	82
3.0% dibutyl malonate	84
0.6% dinitrile	54
1.7% butyl-alpha-cyancrotonate	76

"*Claim*: Process for the preparation of polymeric carboxylic acids and their derivatives by action of bases or of substances reacting alkalinely in aqueous solution, on acids of the type of crotylidene cyanacetic acid and their derivatives characterized in that the polymerization is executed in the presence of substances containing methyl-, methylene-, or methine-groups."

The most recent application for a patent[10] in this class which has already been granted is that of December, 1937, granted to Drs. Brunotte, Schaich, and Winnacker, and assigned to the I.G., entitled, "Process for the Preparation of 2-Chloro-Butadiene(1,3)-Polymerizates." The complete text follows:

"In patent 683,232[11] a process has been described whereby industrially valuable polymerizates are obtained from 2-chloro-butadiene in that the polymerization in aqueous suspension at temperatures between 30 and 40° C. is so executed that the suspension flows through a reaction-vessel of small diameter and much length. In patent 687,387[11] this process is extended in that the temperature may be raised above 40° C. and up to, for instance, 55° C., that is, just under the boiling point of the 2-chloro-butadiene. The duration period in this method of operation ranges from one-half to one hour.

"It has now been found that especially valuable industrial products are obtained by subdividing the reaction-space into two temperature zones, and in this new process the operation is such that the 2-chloro-butadiene in aqueous suspension and optionally with the addition of appropriate emulsifiers and catalysts is first passed through a reaction-vessel heated to temperatures just below the boiling point, to 40-60° C.; then the polymerization is allowed to proceed further in a reaction-vessel at lower temperature (about 15-25° C.). Thus, for instance, the reaction-vessel is so arranged that the period spent in the reaction-space at the high temperature may amount to only one to two minutes; while one to two hours may be spent in the second reaction-space. In this procedure it is observed that in the first reaction-space with short period of occupation practically no polymerization occurs, as may be determined by precipitating the polymerizate with acid and salt solutions. Only after further reaction in a lower temperature zone during a considerable period does the polymerizate form in the desired amount. Presumably the cause of this behavior is to be attributed to the formation of nuclei in the first reaction-space, and a reaction begun at the higher temperature which then slowly develops further in the lower temperature zone. In this way are obtained products of very great plasticity which can be readily worked up in the customary fabricating machines such as rolls and kneaders. In contra-distinction to the manner of operation in a high temperature zone with longer period of occupation, the subdivision of the reaction-space has the advantage that the polymerization can be carried considerably further than was previously possible. Thus, for instance, by the addition of 5% of vinylmethyl ketone, without use of the customary regulators the polymerization can be extended to a yield of 90% without the occurrence of a very intense hardening of the coagulate such as is observable when but one temperature zone is employed.

"In comparison with the operation exclusively at low temperatures, e.g., 20° C., the pre-installation of a reaction-zone with high temperature and short period of occupation has the advantage that the space-time yields are appreciably greater.

"*Example* 1: 76 parts by weight of 2-chloro-butadiene and four parts by weight of vinylmethyl ketone with the addition of 2.5 parts by weight of sodium di-isobutyl-naphthalene sulphonate and 1.5 parts by weight of sodium oleate are emulsified at 5° C. in 160 parts by weight of water. The emulsion at 55° C. is introduced into a pipe of five millimeters inner diameter and about one meter long. The velocity of flow is so regulated that a period of occupation of some one to 1½ minutes results. The emulsion then passes directly into a pipe, the temperature of which is maintained at 20° C. This pipe is so dimensioned that the time spent in it amounts to about 80 minutes. For instance, the pipe has a diameter of 10 millimeter and a length of 20 meters. Directly thereafter the emulsion is again chilled to 5° C. The product is further worked up in the usual manner and possesses a strength of about 280 kilograms per square centimeter (approximately 4,000 pounds per square inch), an elongation of 600%.

"The advantage of this method of operation and the bisecting of the reaction-space lies in the fact that it is possible in this way to attain an almost complete polymerization and consequently to eliminate the recovery of the monomers.

"*Example* 2: 76 parts by weight of 2-chloro-butadiene and four parts by weight of vinyl acetate with the addition of 2.5 parts by weight of sodium di-isobutyl naphthalene sulphonate and 1.5 parts by weight of sodium oleate are emulsified at 5° C. in 160 parts by weight of water. The emulsion obtained is subjected to polymerization as described in Example 1. The end product obtained then agrees in its properties with Example 1.

"*Claim* 1: Development of the process of patent 683,232 for the preparation of rubbery polymerizates non-hardening in storage, from 2-chloro-butadiene, characterized in that the polymerization is carried out in two reaction-vessels connected in series having small diameters and considerable lengths; the first of which is heated to 40 to 60° C. while the second is maintained at about 15-25° C.

"*Claim* 2: Process according to Claim 1 characterized in that the reaction is carried out for a short period at the higher temperature and for a longer time at the lower temperature.

"*Claim* 3: Process according to Claims 1 and 2 characterized in that simultaneously with the 2-chloro-butadiene, other polymerizable vinyl compounds are polymerized."

[9] See Berl-Lunge, "Chem.-Techn. Untersuchungsmethoden," 8th Ed. Vol. 5, p. 945, and *Cellulose-Chemie*, 13, 61 (1932).
[10] No. 695,477, Aug. 19, 1940.
[11] India Rubber World, Dec., 1940, p. 54.

General Preference Order No. M-15 to Conserve the Supply and Direct the Distribution of Rubber[1]

WHEREAS, it is found that the uncertainty of future shipments of Rubber from abroad now seriously threatens the requirements of the National Defense Program for Rubber and products and materials of which Rubber is a component; and it is further found that the same may imperil the obtaining of priority for deliveries of such defense materials under present and future Army and Navy contracts and orders and related subcontracts and suborders unless the total present and future supply be conserved and the present and future use and distribution directed; and it is further found that the best interests of the national defense require the exercise of the power conferred upon me to direct and insure such priority; (and)

NOW, THEREFORE, IT IS HEREBY ORDERED:

940.1 GENERAL REFERENCE ORDER

(a) Deliveries under Defense Orders, present and future, of Rubber, and products and materials of which Rubber is a component, by all Processors thereof shall be made in preference to deliveries under all other orders whenever and to the extent necessary to assure fulfillment of the delivery schedules provided in such Defense Orders or in any individual Preference Rating Certificates assigned thereto, whichever schedules be earlier.

(b) Deliveries under non-defense orders of Rubber, and products and materials of which Rubber is a component, by the Processors thereof may be made without limitation, except as otherwise specified in this Order.

(c) (1) During each calendar month of the second half of the year 1941, each Processor of Rubber shall limit the total consumption or processing of Rubber, including that obtained from the Rubber Reserve Co., from his own inventory and from any other source, to an amount (hereinafter termed his "quota") not to exceed the following percentages of his average monthly consumption or processing of Rubber from all sources during the twelve months' period commencing on April 1, 1940, and ending on March 31, 1941:

July	99%
August	94%
September	89%
October	84%
November	82%
December	80%

Provided, however, that a Processor who consumes or processes less than his quota in a particular month may add the amount so unconsumed or unprocessed to any subsequent quota or quotas.

(2) Commencing June 20, 1941, all Rubber then or thereafter released by the Rubber Reserve Co. will be allocated by the Director of Priorities in accordance with the following provisions:

(i) For delivery to any person whose supplies on hand and on order are sufficient for his Defense Orders;

(ii) Where deemed necessary to expedite deliveries under Defense Orders and such result cannot be adequately obtained by use of preference ratings;

(iii) Any surplus remaining after fulfillment of the foregoing purposes may be allocated by the Director among non-defense orders.

(iv) Insofar as the Director of Priorities shall make allocations among competing civilian demands, the Director will be governed by the Civilian Allocation Program for Rubber issued or to be issued by the Office of Price Administration and Civilian Supply.

(d) Any Person who obtains a delivery of Rubber or products or materials of which Rubber is a component, under specific direction of the Director of Priorities or a delivery bearing a preference rating, must use the same, or an equivalent amount thereof, for the purpose specified in connection with the issuance of the direction or rating.

(e) No Processor shall discriminate against Defense Orders in the acceptance of contracts or orders for Rubber or products or materials of which Rubber is a component. When Defense Orders for Rubber, or products or materials of which Rubber is a component, are offered, they shall be accepted in preference to any other contracts or orders offered under substantially the same terms and conditions.

(f) When deliveries of Rubber, or products or materials of which Rubber is a component, have been unreasonably or improperly deferred by any Processor, or when orders therefor have been rejected (for any reason other than the restriction contained herein), the Person aggrieved may file with the Division of Priorities a verified report in form to be prescribed by the Division of Priorities, setting forth the facts in connection with such deferment or rejection. Where the facts set forth justify such action, the Director of Priorities will thereupon direct the Processor against whom complaint is made to submit a sworn statement, setting forth in detail the circumstances concerning the alleged deferment of deliveries or rejection of the orders. Thereafter such action will be taken by the Director of Priorities as he deems appropriate.

(g) In addition to all other limitations and restrictions upon orders and deliveries contained herein, no Processor shall, after the effective date of this Order knowingly make delivery of Rubber, and no Processor shall accept delivery thereof, in an amount or quantity which will increase for any current month the inventory of Rubber of the Processor accepting delivery, in the same or other forms, in excess of the amount or quantity necessary to meet required deliveries of the products of the Processor accepting delivery, on the basis of his current method and rate of operation. This provision shall not prohibit or restrict:

[1] Title 32—National Defense, Chapter IX—Office of Production Management, Subchapter B—Priorities Division, Part 940—Rubber and Products and Materials of which Rubber is a component.

(i) Deliveries for direct export out of the United States, provided that such exports shall have been licensed by the Administrator of Export Control;

(ii) Deliveries of imported Rubber to any Processor importing the same, either directly or through an agent, under a contract which was in existence upon the effective date of this Order.

(h) All Processors affected by this Order shall keep and preserve for a period of not less than two years, accurate and complete records of their inventories of Rubber, and products and materials of which Rubber is a component, and of the details of all transactions in any way regulated or affected by this Order. Such records shall include the dates of all contracts or orders accepted, the delivery dates specified in such contracts or orders, and in any Preference Rating Certificates accompanying them, the dates of actual deliveries thereunder, description of the Rubber or products or materials of which Rubber is a component covered by such contracts or orders, description of deliveries by classes, types, quantities, weights and values, the parties involved in each transaction, the preference ratings, if any, assigned to such contracts or orders or to deliveries thereunder, and other pertinent information. All records specified in this paragraph shall, upon request, be submitted to audit and inspection by duly authorized representatives of the Division of Priorities. All Processors affected by this Order shall execute and file with the Division of Priorities such reports and questionnaires as said Division shall from time to time request. No reports or questionnaires are to be filed by any Processor until forms therefor are prescribed by the Division of Priorities.

(i) Any Processor who wilfully falsifies the records referred to in paragraph (h) above, or any other records which he is required to keep by the Director of Priorities, or who otherwise wilfully furnishes false information to the Director of Priorities or to the Division of Priorities, and any Person who obtains a delivery or a preference rating for a delivery by means of a material and wilful misstatement, may be prohibited by the Director of Priorities from making or obtaining further deliveries of Rubber and products and materials of which Rubber is a component. The Director of Priorities may also take any other action deemed appropriate, including the making of a recommendation for prosecution under section 35 of the Criminal Code (18 U.S.C.A., section 80).

(j) Any Person affected by this Order who considers that compliance therewith would work an exceptional and unreasonable hardship upon him, may appeal to the Division of Priorities by addressing a letter to the Division of Priorities, Office of Production Management, Social Security Building, Washington, D. C., setting forth the pertinent facts and the reasons such person considers that he is entitled to relief. The Director of Priorities may thereupon take such action as he deems appropriate.

(k) Any Processor who is prohibited from, or restricted in, making deliveries of any Rubber or products or materials of which Rubber is a component, by the provisions of this Order shall, as soon as practicable, notify each of his regular customers of the requirements of this Order.

(l) For the purposes of this Order:

(1) "Rubber" means all forms and types of crude rubber.

(2) "Person" means and includes any individual, partnership, association, corporation, or other form of business enterprise.

(3) "Processor" means any Person processing or consuming Rubber.

(4) "Defense Orders" means contracts or orders for material, unfinished, semi-finished, or finished which at any stage of production enters into the manufacture, processing, or fabrication of products to be delivered to, or for the account of

1. The Army or Navy of the United States, the United States Maritime Commission, the Panama Canal, the Coast and Geodetic Survey, the Coast Guard, the Civil Aeronautics Authority, or the National Advisory Commission for Aeronautics;
2. The Government of Great Britain;
3. The Government of any other country whose defense the President deems vital to the defense of the United States under the Act of March 11, 1941, entitled "An Act to Promote the Defense of the United States."
4. Any other Government agency or any Person, when the Director of Priorities shall have assigned a preference rating of A-10 or higher thereto.

(m) This Order shall take effect on the 20th of June, 1941, and unless sooner terminated shall expire on the 31st day of December, 1941. This Order shall supersede as of the date hereof any special orders or directions for the delivery of any Rubber by the Director of Priorities.

(O.P.M. Reg. 3, Mar. 7, 1941, 6 F.R. 1596; E.O. 8629, Jan. 7, 1941, 6 F.R. 191; Sec. 2a, Public No. 671, 76th Congress)

Issued this 20th day of June, 1941.

E. R. Stettinius, Jr.
Director of Priorities.

Rubber Reserve Co. Sole Buyer

Jesse Jones, Federal Loan Administrator, with the approval of the President, June 21 announced that effective June 23, 1941, the Rubber Reserve Co. would become the sole buyer for crude rubber exported to the United States from the Far East. The purpose of this action is to accelerate the accumulation of the government reserve supply and to facilitate distribution to the manufacturing industry for defense and commercial requirements in accordance with such consumption programs as may be established by the Office of Production Management and the Office of Price Administration and Civilian Supply.

The arrangements have been worked out through the cooperation of the British and Dutch governments, the International Rubber Regulation Committee, and the Rubber Reserve Co. All exports of crude rubber to this country from British and Dutch possessions will be restricted to the Rubber Reserve Co. The consummation of existing purchase contracts will not be affected.

The buying organization heretofore established by Rubber Reserve Co. with the cooperation of the industry, and the facilities of the crude rubber trade will be utilized. Rubber will be purchased at the top of the price range specified in the agreements with the International Rubber Regulation Committee which is 18½¢ U. S. A. currency per pound for standard 1X ribbed smoked sheets, f.o.b. transoceanic ships, Asiatic ports.

Census of Manufactures: 1939

Insulated Wire and Cable

PRELIMINARY figures for 1939 for four selected industries in the Electrical Machinery Group, compiled from returns of the 1939 Census of Manufactures, taken in 1940, have been released by the Bureau of the Census, Department of Commerce. This Group includes the following industries: Automotive Electrical Equipment, Electric Lamps, Electrical Appliances, and Insulated Wire and Cable, but we are concerned only with the last mentioned. This industry, as constituted for census purposes, includes establishments primarily engaged in the manufacture of insulated or armored wire and cable for transmitting electrical energy; while the manufacture of uninsulated wire is covered in the report for the "wire drawn from purchased rods" industry.

Employment, Wages, Product Value

The decreases from 1937 to 1939 in the number of wage earners and their wages, as shown below, may be partially accounted for by the fact that the 1939 Census of Manufactures questionnaire, for the first time, called for personnel employed in distribution, construction, etc., separately from the manufacturing employes of the plants. It is not known how many of the wage earners reported for 1937 were engaged in distribution and construction and how many were engaged in manufacturing. Employes of the plants reported as engaged in distribution and construction activities in 1939 are not included in this preliminary report, but will be included in the final one.

Summary statistics for the industry for 1939 and 1937 are given in Table 1. Detailed statistics on production are given in Table 2. All figures for 1939 are preliminary and subject to revision.

Expenditures for Plant and Equipment

The Bureau of the Census obtained for the first time information on the expenditures for plant and equipment made by manufacturing establishments. Such establishments were requested to report charges to capital account for new depreciable assets at cost value. Data were supplied upon the total expenditures for plant, equipment and real estate during the year under three detailed types:

1. Expenditures for new construction or major alterations of buildings and other fixed plant and structures (buildings, docks, tracks, etc.), including elevators, heating and ventilating equipment, etc., essentially a part of buildings or other fixed structures.

2. Expenditures for new machinery and operating equipment, including all new motors, lathes, punch presses, cranes, automobiles, trucks, railroad rolling stock, office fixtures, furniture, typewriters, billing machines, cash registers, and other movable equipment.

3. Expenditures for plant and equipment acquired in a "used" condition from other owners, and expenditures for land.

The four industries reported amounts for total expenditures for plant and equipment for 1939, in order of importance, as follows: Automotive Electrical Equipment, $2,676,894; Electric Lamps, $2,646,550; Insulated Wire and Cable, $2,594,507; and Electrical Appliances, $2,278,948.

The expenditures for plant and equipment, Table 3, include only expenditures reported by establishments engaged in active production during the year 1939. They do not include expenditures for inactive establishments or new establishments whose plants were under construction, but were not completed and actually in use during 1939.

TABLE 1. SUMMARY FOR THE INDUSTRY: 1939 AND 1937

(Because they account for a negligible portion of the national output, plants with annual production valued at less than $5,000 have been excluded since 1919)

	1939	1937	% Decrease
Number of establishments	79	57	(*)
Salaried personnel†	2,598	2,851	8.9
Salaries‡†	$6,428,107	$6,584,589	2.4
Wage earners (average for the year)§	15,696	16,913	7.2
Wages‡§	$18,637,729	$20,683,021	9.9
Cost of materials, supplies, fuel, purchased electric energy, and contract work‡	$70,124,571	$73,170,200	4.2
Value of products‡	$120,390,050	$134,633,318	10.6
Value added by manufacture¶	$50,265,479	61,463,118	18.2

*Per cent, not computed where base is less than 100.
†No data for employes of central administrative offices are included.
‡Profits or losses cannot be calculated from the census figures because no data are collected for certain expense items, as interest, rent, depreciation, taxes, insurance, and advertising.
§The item for wage earners is an average of the numbers reported for the several months of the year and includes both full-time and part-time workers. The quotient obtained by dividing the amount of wages by the average number of wage earners should not, therefore, be accepted as representing the average wage received by full-time wage earners.
¶Value of products less cost of materials, supplies, fuel, purchased electric energy, and contract work.

TABLE 2. PRODUCTS, BY CLASS AND VALUE: 1939 AND 1937

	1939	1937
1. Insulated wire and cable industry, all products, total value	$120,390,050	$134,633,318
2. Insulated wire and cable	90,102,454	101,058,540
3. Miscellaneous products not specified	261,053	2,610,097
4. Receipts for contract and repair work	6,446	93,086
5. Other products (not classified in this industry)	*30,020,097	30,871,595
6. Insulated wire and cable made as secondary products in other industries	†17,520,907	144,283,095
Insulated wire and cable, aggregate value (sum of 2 and 6)	$207,623,361	$245,341,635
Rubber insulated		
Lighting and power circuit		
Braided	38,753,887	46,991,147
Leaded	5,327,464	14,845,464
Telephone	7,351,218	9,562,309
Flexible cord (rubber insulation, cotton, silk, and rayon covered)	16,002,647	19,033,044
Cotton-insulated, including weatherproof and slow-burning	19,825,850	22,680,226
Paper-insulated, including lighting and power circuit, and telephone and telegraph cable (including submarine)	20,783,475	33,420,257
Varnished-cambric insulated	6,189,380	9,140,468
Asbestos	4,476,413	6,529,516
Magnet		
Cotton, silk, and rayon covered	12,970,961	15,515,204
Enameled	12,460,171	14,290,085
Armored cable or conductor	12,984,748	8,916,756
Appliance and extension cords, with attachments, complete	5,840,053	4,285,407
Ignition-cable sets or wire assemblies for internal-combustion engines	7,714,216	13,389,216
All other	36,942,878	26,742,536

*Telephone apparatus, washing machines, switches, switch boxes, wiring devices, conduits.
†Incomplete; complete figures will be given in final report.

TABLE 3. EXPENDITURES FOR PLANT AND EQUIPMENT FOR THE INSULATED WIRE AND CABLE INDUSTRY

	Number or Amount	% of Industry Total
Total number of establishments	79	100.0
Number of establishments reporting capital expenditures for plant and equipment	60	75.9
Total value of products	$120,390,050	100.0
Value of products of establishments reporting expenditures for plant and equipment	118,764,552	98.6
Total expenditures for plant and equipment	2,594,507	100.0
Expenditures for new construction or major alterations of buildings and other fixed plant and structures	436,542	16.8
Expenditures for new machinery and operating equipment	2,058,509	79.3
Expenditures for plant and equipment acquired in a "used" condition from other owners and expenditures for land	99,456	3.8

EDITORIALS

Government Control of Crude Rubber

ON MAY 31 the total United States stocks of crude rubber were reported as 359,393 long tons with 147,459 long tons afloat. United States consumption for May was 71,187 long tons, in comparison with the high May imports of 101,404 long tons. At the moment there is no actual shortage of crude rubber, and with the exception of the month of April there has been a steady, but comparatively small increase in United States stocks. Justification for government control lies in the projective and not the current situation.

The recently initiated control by the United States Government of rubber consumption, stocks, and import price is purely a precautionary measure intended for the sole purpose of increasing the reserve supply of crude rubber physically located within the boundaries of this country. After careful consideration of the greatly increased consumption during recent months and the prospects for greater defense needs together with the lack of positive assurance of uninterrupted deliveries to American ports at the May rate, it is clearly evident that some immediate action was desirable in order to advance our strategic position and lessen the possibility of future disruption of the defense program, disorganization of the rubber industry, and extreme privation of rubber products from civilian needs through a lack of raw materials.

The full text of General Preference Order No. M-15 to conserve the supply and direct the distribution of rubber as issued on June 20 by the Priorities Division of the Office of Production Management is reproduced on page 43 of this issue. Likewise appears on page 44 the announcement by Jesse Jones that effective June 23, the Rubber Reserve Co. became the sole buyer of crude rubber entering this country.

The adopted method of limiting the average monthly consumption for the balance of 1941 to about 50,000 long tons in comparison with the actual average of over 70,000 for March, April, and May will necessitate the drastic cut from present schedules of about 30% for the industry. The workers to be laid off will probably be absorbed elsewhere, thus creating a shortage of trained operators at such time as full production activities are resumed. Before this plan can work smoothly and with a minimum of injustice, innumerable details must be worked out and interpretations must be clarified. Presumably companies producing many types of rubber products, including tires, footwear, mechanical goods, sundries, and proofed goods, will be able to consolidate their savings of rubber. In this way a large company may not need to alter its practices on an individual line of products if sufficient savings can be made elsewhere. On the other hand a company manufacturing a single line of products will be forced to cut its schedule if that particular line does not lend itself to substitution of available materials.

If the program may rightly be interpreted to mean that an individual company will be permitted to process a total amount of rubber based on the stipulated percentages of previous consumption and from that total deduct the needs of its defense orders, then the amount of rubber remaining for its civilian consumers will vary inversely with that company's participation in defense business. However, as individual preference must be subordinated to national needs to the same extent that individual safety depends on national security, it is important that all processors and civilian consumers impartially cooperate with the objective of the adopted program which in the final analysis, fosters the continuity of the rubber industry.

In view of the last paragraph of General Preference Order No. M-15, which states that unless sooner terminated this order shall expire on December 31, 1941, it is evident that this procedure is intended to be temporary and non-existent after the domestic stocks have been raised to a then-considered ample supply.

Another method, previously advocated in these editorial columns, of rapidly increasing the crude rubber reserve consists of decreasing the total inventory of finished goods through standardization and consolidation of types, grades, and brands into fewer items so determined as to provide the same service effectiveness, but with less consideration for the buyer who requests a specialized product. Such a program can only result from cooperative action by the members of a sub-industry group in a real desire to simplify the line of merchandise. During the period of inventory constriction the resulting decreased production will result in lower consumption of crude rubber. By nature of the products and methods of distribution greater results can be accomplished in some sub-industry groups than in others, but the results will be more in line with the actual needs of the respective consumers than in the instance of the present arbitrary restriction program.

The members of the rubber manufacturing industry still have this opportunity for voluntary collaboration in an effort to accomplish more quickly the objective of General Preference Order No. M-15 and thereby expedite the resumption of normal activities when the crude rubber reserve has reached its desired level. Before the issuance of this priority order the rubber industry did not fully avail itself of the opportunity to institute corrective measures, but there still remains a way to alleviate and shorten the effects of government control if individual consideration is subordinated to industry welfare.

As we go to press, it is learned that General Preference Order No. M-15 was amended on June 27 by Supplementary Order No. M-15-a which provides that no processor shall be required to reduce his rubber consumption during July by more than 20% of his June, 1941, figure.

S. C. Stillwagon

EDITOR

What the Rubber Chemists Are Doing

Rubber Division, A. C. S., Activities

Holt and Bridgwater Invited to Speak at Fall Meeting

AS ANNOUNCED here last month the fall meeting of the Division of Rubber Chemistry, A. C. S., will be held on Thursday and Friday, September 11 and 12, at Atlantic City, N. J., with the Ritz-Carlton as division headquarters. The banquet will take place Thursday evening, September 11, in the Ambassador Hotel; while the four half-day technical sessions will be held in Convention Hall.

The Charles Goodyear Lecture, which had been scheduled for the Thursday afternoon session, will not be presented this year. Dr. David Spence, to have been the first recipient of the lecture award, has been taken ill. At the Thursday afternoon session, invited papers by E. G. Holt, Chief of Consumption Materials Unit, Bureau of Foreign and Domestic Commerce, and E. R. Bridgwater, E. I. du Pont de Nemours & Co., Inc., will be given. It is expected that the Division will provide a third speaker for Thursday afternoon to discuss a subject of unusual interest.

According to the new method of electing Division officers by letter ballot, the ballots will not be counted until the time of the fall meeting by a special tellers committee, and the results of the election will not be announced until the business meeting.

New York Group Holds Outing

APPROXIMATELY 200 members and guests enjoyed a day of fun and sport at the annual outing of the New York Group, Rubber Division, A. C. S., held at the North Jersey Country Club, Preakness, N. J., June 6. Good weather and the excellent grounds and facilities of the club contributed to the day's success.

Prize winners in the golf tournament were: *low gross*, J. Marsh (Okonite); *kicker's handicap*, R. T. Reid; *lowest putts*, Sam Tinsley (Vanderbilt); *closest to the pin on the fourth hole*, M. R. Buffington (Lee Fabrics). In the other events, prizes went to: *boccie*, Frank Spargo and Frank Nichols (both of General Electric); *tennis*, D. A. Comes (Farrel-Birmingham) and J. T. Ball (Vanderbilt); *horseshoe pitching*, W. F. Lamela (Okonite) and R. E. Leeks (Flintkote); *darts*, S. Doner (Manhattan Rubber) and H. R. Ferguson (Thiokol); *clock golf*, A. Eufer (Vanderbilt) and H. Brainbridge (C. K. Williams); *baseball throw*, L. O. Longworth (Monsanto) and A. J. Schorr (Vanderbilt). The team captained by J. G. Augenstein (Pequanoc) won the soft ball contest.

S. C. Stillwagon, (INDIA RUBBER WORLD), outing chairman, was assisted by J. W. Crosby (Thiokol), M. E. Lerner (*Rubber Age*), B. B. Wilson (INDIA RUBBER WORLD), and the following who took charge of the various events: *baseball throw*, Mr. Ball; *boccie*, G. H. Provost (U. S. Rubber); *clock golf*, E. L. Wright (Herron & Meyer); *darts*, G. M. Vacca (Bell Telephone Laboratories); *golf*, P. P. Murawski (Du Pont); *horseshoe pitching*, Mr. Lamela; *soft ball*, Fred Conover (Naugatuck); *tennis*, Mr. Comes.

Chicago Group Holds Plastic Symposium

A SYMPOSIUM on plastics and an exhibition of rubber compounding ingredients featured a meeting of the Chicago Group, Rubber Division, A. C. S., at the Congress Hotel, Chicago, Ill., June 6. More than 250 members and guests were served dinner.

Opening the symposium with a paper on "The History and Development of New Plastics for Industry", W. C. Goggin, Dow Chemical Co., Midland, Mich., traced the chemical development of plastics and the progress of their use in industry. He also explained the various type of plastics, displaying a number of finished products, and briefly discussed the equipment used in their manufacture. An interesting talk on "The History and Uses of Cellulose

Acetate Molding Powder" was given by W. F. Cullom, Jr., Celluloid Corp., Newark, N. J., who opened his remarks by calling attention to Hyatt's discovery in 1871 of celluloid or cellulose nitrate, the forerunner of all modern synthetic plastics. The remainder of Mr. Cullom's talk was centered on non-inflammable cellulose acetate plastics and descriptions of many new products, some of which were made for the first time the day before. The last speaker, T. W. Sharp, Carbide & Carbon Chemicals Corp., Chicago, discussed "Vinyl Resins" in a talk which emphasized the chemical and physical properties of these materials. The symposium was completed with the presentation of a motion picture showing the injection molding of plastics. The 23 companies participating in the exhibition of rubber chemicals and compounding ingredients were as follows:

American Zinc Sales Co., Binney & Smith Co., Celluloid Corp., Commerce Petroleum Co., Commercial Solvents Corp., Dow Chemical Co., E. I. du Pont de Nemours & Co., Inc., Genseke Brothers Soap Co., C. P. Hall Co., Herron & Meyer (Chicago), Mid-Continent Chemical Corp., George F. Mepham Co., Midwest Rubber Reclaiming Co., Monsanto Chemical Co., Naugatuck Chemical Division of United States Rubber Co., Philadelphia Rubber Works Co., Socony Vacuum Oil Co., Inc., Thompson Hayward Chemical Co., Titanium Pigment Corp., United Carbon Co., R. T. Vanderbilt Co., Inc., Wishnick-Tumpeer, Inc., and Xylos Rubber Co.

The extensive and well-received program for the evening was arranged by H. A. Winklemann, group chairman, in cooperation with Calvin Yoran and Ray Morath. Charles Baldwin, of the Chicago office of the United Carbon Co., donated a door prize for the affair.

Los Angeles Group

WITH a program sponsored by the Firestone Tire & Rubber Co., and 120 members and guests attending, the Los Angeles Group, Rubber Division, A. C. S., met on June 3 at the Mayfair Hotel, Los Angeles, Calif. C. L. Smith, factory manager of Firestone's Pacific coast plant, who acted as chairman of the program committee, was presented with a large cake in recognition of his 30 years with Firestone. At the affair L. D. Pritchard, director of public relations for the University of Southern California, spoke on "Democracy's Decade of Dilemmas." Three prize winning amateur motion pictures completed the program.

C. A. Lamb and C. K. Converse won the two door prizes, a spot-light and a car cooler while the special prize, a Coleman stove, went to W. G. Tapping. Firestone donated the three prizes.

Boston Group Outing July 18

THE annual outing of the Boston Group, Rubber Division, A. C. S., will be held in the afternoon and evening of Friday, July 18, at the Weston Country Club, Weston, Mass., where the outing was held the last two years. The club is on Wellesley St., which is opposite the Meadowbrook School and directly accessible from Routes 9, 20, and 30. These routes are crossed by Route 128 which leads from Route 1.

Frank Ward, of the Panther-Panco Rubber Co., Inc., and Harry A. Atwater, of the Hood Rubber Co., will be in charge of the affair, which will include golf, tennis, quoits, softball, and other usual events, followed in the evening by a steak or lobster dinner and prize awards. An appropriate program will be arranged in the event of rain.

The Buffalo Group, Rubber Division, A. C. S., cancelled its outing previously scheduled for June 14. The next meeting of the Group will probably be held in September.

R. I. Club Holds Outing and Hears Alan Grant

THE Rhode Island Rubber Club held its annual outing at the Pawtucket Golf Club, Pawtucket, R. I., on Friday, June 13, but the date proved no jinx; the threatened rain held off 'til midnight, and there was nothing to interfere with a fine day of golf and pleasant dinner and get-together in the evening.

Some forty members played golf. The prize winners were: low gross, H. B. Simmons, first; J. W. Morrissey, second, and Louis Yates and James Christopher, tied for third. Winners of prizes for the blind bogey, set at 76, were: Joseph Cryans, James Murray, and H. W. Fish.

The feature of the dinner was a talk by Alan Grant, vice-president of Charles T. Wilson, Inc., New York, N. Y., on "Rubber Importing and Trading under Virtual War Conditions", which proved very informative. Mr. Grant painted a rather encouraging picture of future crude rubber supplies, paying tribute to government agencies for their cooperation in providing for adequate shipping.

Nearly 100 men attended the dinner, and practically all of them carried away a door prize as a result of the generosity of various concerns in contributing gifts.

The contributors included:

American Zinc Sales Co., Robert Badenhop Corp., Jeffrey P. Barry, Binney & Smith Co., Brockton Cutting Die & Machine Co., Cleveland Liner & Mfg. Co., Wm. D. Eggleston Co., Farrel-Birmingham Co., Inc., E. I. du Pont de Nemours & Co., Inc., Firestone Rubber & Latex Co., C. P. Hall Co., Hookless Fastener Sales Co., Ernest Jacoby & Co., Krebs Pigment Co., Meyer & Brown Corp., H. Muehlstein & Co., Inc., Pequanoc Rubber Co., Philipp Bros. Co., Rubber Service Division of Monsanto Chemical Co., Henry L. Scott Co., A. Schulman, Inc., Stamford Rubber & Supply Co., Titanium Pigment Corp., United Carbon Co., U. S. Rubber Reclaiming Co., R. T. Vanderbilt Co., Vansul, Inc., Weller Chemical Co., L. G. Whittemore, Inc., Wishnick-Tumpeer, Inc., and Xylos Rubber Co.

Full Priority Control for Zinc Oxide Put in Effect

EFFECTIVE July 1, all zinc oxide, lead-free and leaded, together with all grades of metallic zinc, were put under full priority control in a General Preference Order issued June 11, by E. R. Stettinius, Jr., Director of Priorities. The order provides that all defense needs shall be filled first, that an emergency pool will be created to meet urgent needs, and that the remaining material shall be allocated among competing civilian demands. Previous to this action, zinc metal had been subject to partial control through a production pool, but zinc oxide heretofore has been unaffected.

The amount of zinc oxide that producers must set aside for the pool during July will be 10% based on the total production for May, 1941. Measures have been taken to insure that small consumers (using up to one ton monthly) will obtain needed supplies. Provisions are being taken to prevent consumers from increasing their oxide stocks, and all shipments must move into consumption. For some time now the zinc oxide supply situation has been tight, and all consumers have not been able to receive all the zinc oxide they have called for. Because of the features of the new measure, contract shipments to users will be cut in general more than 10%, depending on each individual case.

Although the recently announced curtailment of rubber for civilian use will serve to reduce zinc oxide requirements, this will be counterbalanced to a large extent because of increased production of defense goods such as truck-type tires, hose, and insulated wire which require relatively larger quantities of oxide than do passenger-car tires and other civilian products.

Walnut Shell Flour as a Filler

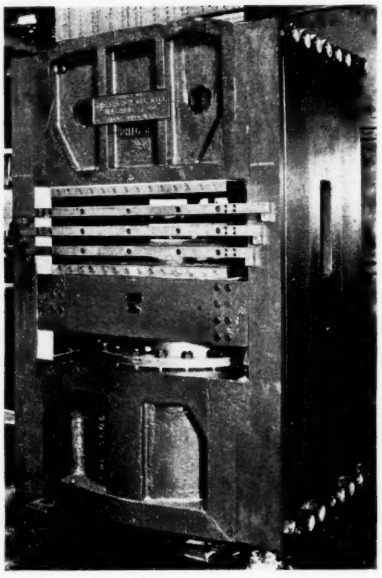
ENGLISH walnut shell flour is now being offered by Agicide Laboratories, Inc., as an organic filler for rubber in three grades: C-200, C-250, and C-325 (number refers to the mesh size). The specific gravity of the flour is 1.25 to 1.46, and it weighs between 26 and 34 pounds per cubic foot, depending upon the fineness of grind. These fillers are composed of homogeneous particles nearly spherical in shape. The manganese content is less than 0.001%, and the flour is said to be water resistant and to have good dielectric properties.

Useful in hard rubber and soft rubber products, the flour is said to improve tensile strength, elongation, flexing properties, and resistance to abrasion and aging. The low specific heat factor of walnut shell flour suggests its use in preventing condensation on the surface of the rubber.

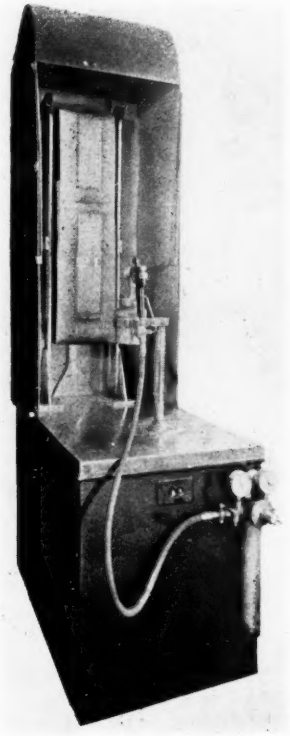
Chlorination Finish

WASHINE, a form of sodium hypochlorite solution manufactured by Washine-National-Sands, Inc., is said to destroy the tack and increase the polish of vulcanized rubber and neoprene products. The treatment, reported to have been developed by the Rubber Chemicals Division of E. I. du Pont de Nemours & Co., Inc., consists of chlorinating the rubber or neoprene by immersion in Washine under controlled acid conditions for five to ten minutes.

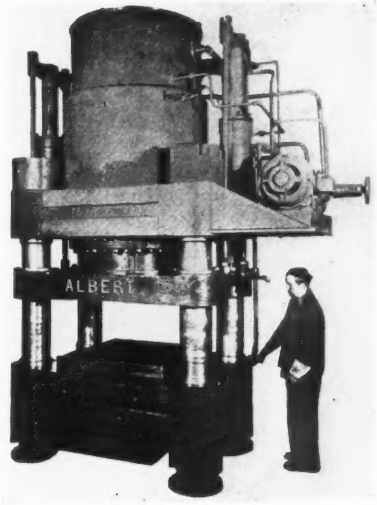
New Machines and Appliances



This 1,200-ton hot-plate press has four two-inch openings with a 42- by 42-inch platen area, a 36-inch diameter ram, a 12-inch stroke, and a working pressure of 2,350 pounds per square inch. The French Oil Mill Machinery Co., Piqua, O.



Chrysler Spray Machine for Producing Adhesive Test Panels



This 1,000-ton press of the downward acting type, built for pressing high-speed grinding wheels for cutting steel, has 50- by 50-inch square plates, a 36-inch diameter ram, rapid traverse, and a motor-driven rotary-type hydraulic pump with a tank reservoir and surge valve. The press can be adapted for molding and vulcanizing rubber articles by the addition of heatable platens. L. Albert & Son, Trenton, N. J.

Machine Sprays Adhesives on Test Panels

IN A paper on "Rubber Adhesives in Automotive Industry", presented before the Detroit Rubber & Plastics Group on May 9, R. L. Wheeler, of the Chrysler Motor Corp., described a spray machine (illustrated) for producing a uniform coating of cement on a test panel. The machine consists of an endless belt moving at a constant speed and a spray gun holder. The panels to be coated are hung on the conveyer, coated as they pass the gun, and removed. The material to be bonded to the panel is then applied by using a roller of given weight.

Three different test methods were described. In one the coverage of cement is held to a definite value (for example, 200 square feet per gallon), and the time interval between spraying and bonding is varied (for example, from ½ to 10 minutes) to obtain a series of test panels. One-third of the length of material is peel-pulled, 20 minutes after bonding, from the panel in a Scott machine at a speed of 20 inches per minute. The next one-third is pulled 24 hours later, and the balance after oven aging one week at 158° F. Using the three sets of data, the indicated adhesion in pounds is plotted against the exposure interval before bonding.

In a heat test method, test panels are made by varying the amount of adhesive for each panel, and by bonding in all cases two minutes after spraying. After the panels are air dried for two hours, a ½-pound weight is fastened to one end of the material, and the panel is suspended horizontally in an oven at 210° F., with the fabric or other bonded material on the under side. A support placed beneath the weight removes the load on the material; after 10 minutes the support is removed, and the time required for the weight to pull off a section six inches long (four-inch width) is recorded. This time is plotted against the coverage in square feet per gallon. Where the adhesive is applied to both the fabric and the base, the coverage is varied, and the time between spraying and bonding is held constant. The adhesion data is obtained as in the first method, and the adhesion in pounds is plotted against coverage.

Black Rock Three-Roll Hose Wrapping Machine

Three-Roll Hose Wrapping Machine

A THREE-ROLL wrapping machine can be used for either straight or cross wrapping of uncured hose or tubing from ½ to 18 inches in diameter and in length up to 48 inches, which have previously been mounted on mandrels. The two bottom rollers are driven by a 1½ h.p. motor, controlled by a foot treadle extending the length of the machine. The top roller is raised and lowered pneumatically, and additional pressure, other than the weight of the roller, can be applied by air pressure. When straight wrapping, the wrap can be taken from a cured tube and applied on the uncured tube by placing the cured stock on two snubbing rollers on the front of the machine. It weighs 2,100 pounds, is 96 inches high, and occupies a floor space of 97 by 43 inches. The Black Rock Mfg. Co., Bridgeport, Conn.

New Goods and Specialties

Sub-Strato Mask

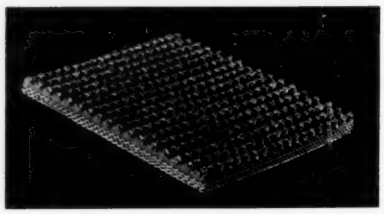
USE of the B-L-B Sub-Strato mask for aviators is said to result in exceptional comfort at high altitudes and a saving of 75 to 80% in oxygen. Made from a latex compound that will not harden at low temperatures, the mask is designed to conform with the underlying bony structures of the face rather than the exterior surfaces. A sponge rubber disk acts as an inhalation and exhalation valve. Oxygen is delivered to the lower end of the rebreathing bag, then passes to the nose chamber where it is inhaled. Exhaled gases pass down into the bag, and as the bag becomes distended with expired gases and incoming oxygen, the slight pressure formed causes the remaining portion of

Sub-Strato Mask for Aviators

the exhalation to pass out through the sponge rubber disk. As this portion that passes out carries the greater part of the carbon dioxide formed within the lungs, it is undesirable for rebreathing. On each inhalation a mixture of new and expired oxygen is drawn in, together with atmospheric air entering through the sponge rubber disk. It is by rebreathing the more desirable portion of each exhalation that a saving of oxygen is effected. The Ohio Chemical & Mfg. Co.

Deep Cover Impressions Featured on Package Belt

THE "Traction Top" package belt features deep cover impressions, designed to increase surface drag and cling. This cover of tan color is claimed to provide a more positive grip on packages and greater assurance against sliding on steep inclines. The standard top cover thickness is 5/32-inch with impressions 3/32-inch deep. The cover design is of a rough, irregular nature laid out on a uniform pattern. Providing a load capacity range sufficient to handle any installation so far encountered, the belt is made in all standard widths up to 48 inches, in two-, three-, four-, and five-ply types and with 28-ounce or 32-ounce duck. A friction surface on the pulley side is standard. United States Rubber Co., 1230 Sixth Ave., New York, N. Y.



U. S. "Traction Top" Package Belt

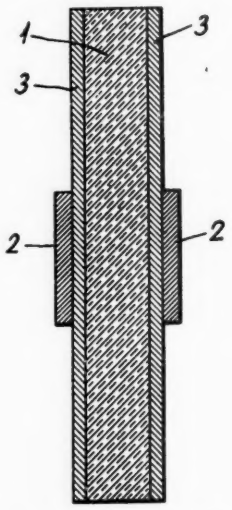
Coolerette Refrigerator Bag

THE Coolerette, a portable zipper bag refrigerator, is essentially three bags inside one another. The outside bag is of duck rubberized on the inside; while the inside bag is of rubberized sheeting, which may be pulled out for cleaning. Between these two bags is a special insulating bag, one inch thick. Ice cubes are placed in a pocket of rubberized sheeting, which is held in a vertical position within the Coolerette by a snap fastener. When dry ice is used, an inner pocket of insulating felt is also used. Based on an outside temperature of 70 to 75° F., the temperature within the Coolerette will be held at 40 to 50° F. for 24 hours with one pound of dry ice, and for 12 hours with one tray of ice cubes, it is claimed. The new refrigerator is designed for yachting, fishing, camping, picnics, etc., and for furnished rooms lacking other refrigeration. Weighing two pounds and made in blue and khaki, the Coolerette is 20 inches long, 14 inches high, and six inches wide at the botton. Hodgman Rubber Co.

Hodgman's Portable Refrigerator

Formex Insulated Wire

FORMEX magnet wire is insulated with a vinyl-acetal-type resin and is now being used in the winding of the new Tri-Clad motor. The insulation is said to be tough and flexible, and to have excellent electrical and chemical properties. Tests on resistance to abrasion show a three-to-one superiority of Formex wire over high-grade enameled wire, it is claimed. The ability of the new wire to stand up under the abuses imposed by modern high-speed winding and assembly operations, is held to be of special importance. General Electric Co.



Microphone: (1) Rubber Body; (2) Electrodes; and (3) Thin Layers of Metal

Piezoelectric Effect of Rubber Used in Microphone Design[1]

CERTAIN crystals are known to exhibit a piezoelectric effect; i.e., electric tensions are produced when the crystals are subjected to compression or tension and vice versa, deformations of the crystals occur when electric tensions are applied. It has been found that similar effects are produced when rubber is placed between two electrodes, presumably because of the orientation of the rubber molecules during manufacture. In producing a microphone based on this idea, a rubber solution is frozen while being subjected to an electrical field so as to orient properly the rubber molecules, according to the patent's claim. It is possible to vulcanize the rubber while in an electrical field.

[1] U. S. patent No. 2,231,159, Feb. 11, 1941.

UNITED STATES

Crude Rubber Consumption to be Curtailed

Government Sole Importer of Far Eastern Rubber

Price Ceilings Indicated

A General Preference Order requiring a cut in the consumption of crude rubber from the current rate of "about 817,000[1] tons a year" to a rate of about 600,000 tons a year during the last half of 1941 was announced June 21 by E. R. Stettinius, Jr., Director of Priorities, Office of Production Management, Washington, D. C. This order is reproduced in its entirety on pages 43-44 of this issue. The cuts will be made gradually, beginning in July and increasing each month thereafter until December, at the end of which the order expires. The allotment of rubber to each processor will be stipulated for the various months as a per cent. of his average consumption for the 12 months April, 1940, to March, 1941, inclusive.

In order to have overall supervision over the distribution of rubber for defense, the Director of Priorities will, commencing June 20, allocate all rubber released by the Rubber Reserve Co. (RFC), and in allocating among competing civilian demands he will be governed by the Civilian Allocation Program of the Office of Price Administration and Civilian Supply. A processor who consumes or processes less than his quota in a particular month may add the amount so unconsumed or unprocessed to any subsequent quota or quotas.

Since the order will cause cuts in the amount of fabricated rubber products flowing out to competing demands, the order provides that defense orders must be filled first.

Processors failing to live up to the terms of the order are subject to punishment. Any processor having the opinion that the order will work undue hardship upon him is advised to communicate with the Division of Priorities.

Rubber imports into this country are now the highest in history, running at a rate of over 1,000,000 tons a year. Present estimates show a surplus for 1941. Because of shipping uncertainties, however, it is felt necessary to safeguard the supply and to build stockpiles. This order is the first issued in which control is imposed over a commodity without a shortage existing.

Jesse Jones, Federal Loan Administrator, with the approval of the President, has announced that effective June 23, the Rubber Reserve Co. would become sole buyer for crude rubber exported to the United States from the Far East at 18½¢ U.S.A. currency per pound for standard 1-X ribbed smoked sheets, f.o.b. transoceanic ships, Asiatic ports. Full text of the RFC release appears on page 44 of this issue.

According to newspaper reports, Leon Henderson, price administrator, has announced a prospective ceiling on tire prices. He said that a schedule will be issued within a few days, providing that no wholesale or retail dealer may charge more for new or newly retreaded tires and new tubes than the lowest net price in effect June 16, except that those dealers who had been underselling their competitors may adjust their prices to the general level. Price lists must be submitted to the OPACS by all producers and wholesale distributers indicating detailed prices that were in effect June 16. Retailers must conspicuously post their notarized lists on their premises. Manufacturers will not be allowed to make any changes in construction, quality, or lines of tires and tubes except after conference with the OPACS.

Also the schedule is to establish ceiling prices on crude, reclaimed, and scrap rubber. Emphasizing the point that no shortage of rubber or rubber products is necessary if consumers do not overstock, Mr. Henderson made an appeal to automobile owners to confine their purchases of tires to their immediate needs.

[1] Reported actual consumption during March, April, and May has averaged at the rate of more than 840,000 long tons.

To Increase Wire Output

Jesse Jones, Federal Loan Administrator, June 3 announced that the Defense Plant Corp., RFC subsidiary, at the request of the War Department, has authorized the execution of lease agreements with Anaconda Wire & Cable Co., New York, N. Y., Okonite Co., Inc., Passaic, N. J., and United States Rubber Co., New York, to provide facilities for the manufacture of assault wire.

The agreement with Anaconda provides for the construction and equipment of a manufacturing plant at Marion, Ind., to cost $353,723.70. It is contemplated that approximately $104,245 will be used for land and buildings, and $249,478.70 for machinery, equipment, other facilities, and contingencies. The title to these facilities will remain with Defense Plant Corp., and the property leased to Anaconda.

The agreement with Okonite provides for the acquisition of machinery and equipment to cost $293,884.78 for use in the company's plant at Paterson, N. J. The title to these facilities will be retained by the Defense Plant Corp.

The agreement with U. S. Rubber provides for the acquisition of machinery and equipment in the company's plant at Bristol, R. I., at a cost of $719,400. The Defense Plant Corp. will retain title to this equipment, which will be leased to the rubber company for operation.

CALENDAR

July 18.	Boston Rubber Group. Annual Outing. Weston Country Club, Weston, Mass.
Sept. 8-12.	A.C.S. 102d Meeting. Atlantic City, N. J.
Sept. 25-26.	S.A.E. National Tractor Meeting. Schroeder Hotel, Milwaukee, Wis.
Oct. 11-14.	N.A.W.M.D. Fall Convention. San Francisco, Calif.
Oct. 12-15.	A.S.M.E. Fall Meeting. Louisville, Ky.
Oct. 30-31, Nov. 1	S.A.E. National Aircraft Production Meeting. Biltmore Hotel, Los Angeles, Calif.

Rubber Industry Uses 10.6% of All Cotton

Charles K. Everett, director of merchandising, The Cotton Textile Institute, 320 Broadway, New York, N. Y., co-sponsor of Cotton Week with the National Cotton Council, recently stated "every week is a big Cotton Week in the rubber industry" for the latter last year used 435,000,000 pounds, or 870,000 bales of cotton, 10.6% of total domestic consumption, 8,234,400 bales.

A recent survey of cotton consumption by the rubber industry, completed by the Institute, revealed that the tire making division (all types except bicycle) uses the greatest volume of cotton, in the fabrication of improved cotton tire fabric. For 1940 the figure was 356,000,000 pounds, or 712,000 bales. Into mechanical rubber goods went 39,000,000 pounds, or 78,000 bales; while rubberized materials took care of 22,000,000 pounds, or 44,000 bales. The rubber footwear industry accounted for 13,000,000 pounds, or 26,000 bales of raw cotton, and miscellaneous uses of cotton by the rubber industry amounted to 5,000,000 pounds, or 10,000 bales.

The United States Bureau of Foreign and Domestic Commerce, Washington, D. C., in a letter signed by Nelson A. Rockefeller, Coordinator of Commercial and Cultural Relations between the American Republics, is urging United States firms not to choose new outlets or accounts in South America without first checking on them with the Commercial Intelligence Unit of the Bureau. Your local as well as the main office of the Bureau will be glad to check, without charge, the desirability of any present or prospective agent, distributer, or customer.

The United States Army has issued to the ski troops attached to the Alaska defense force reversible uniforms of white and green rubberized cotton fabric that can be worn on either side to blend with the landscape.

OPM Priorities

The Priorities Division of the Office of Production Management on June 9 issued two orders providing mandatory priority control over all synthetic rubber and certain types of polyvinyl chloride. The control on neoprene, begun March 28, expired June 30, and the new order, effective July 1, includes this material as well as the other synthetics such as buna types like Hycar, Perbunan, and Chemigum, and organic polysulphides, as "Thiokol." As with neoprene, the Priorities Division will make specific allocations each month regulating the distribution of synthetic rubbers and polyvinyl chloride and make sure all defense needs are filled before non-defense requirements. After July 1 no producer can deliver to any customer or make any further use of manufactured synthetic rubber in his own plant or organization without specific direction from the Director of Priorities. The report also states that current production of synthetic rubber is estimated around 19,600,000 pounds a year, while the minimum defense use is approximately 14,000,000 pounds annually, thus resulting in an overall shortage which can be expected to increase.

A revised, expanded Priorities Critical List was released on June 10. The Critical List is a compilation of materials on orders for which Army and Navy contracting officers may automatically assign preference rating certificates, thus assuring prompt delivery for military purposes. Included on the list are the following supplies used by the rubber industry: acetone; antimony; boilers: power plant, heating; calipers, micrometer; control equipment for electric motors, automatic; extinguishers (fire); all types; floodlighting equipment; generators, electrical and motor dynameters, including N.E.M.A. standard types, meeting A.I.E.E. specifications and rules; Halowax solution for insulating wire; hexamethylene tetramine; machines: addressing and duplicating of all types, including plates (except aluminum), type, platemaking equipment; motors electric, except fractional horsepower; neoprene; polyvinyl chloride (and co-polymers containing at least 90% vinyl chloride) plasticized or unplasticized; rubber, synthetic; rubber-like synthetic materials; thermometers, industrial; time interval apparatus; and transformers, electric. Rubber products listed follow: cable, electric and telephone, all kinds including assemblies; cloth, rubberized; masks: gas, oxygen; and mattress, all types.

OPM Regional Offices

E. R. Stettinius, Jr., Director of Priorities, on June 17 announced the creation of a Priorities Division field organization with regional offices in various parts of the country. The field offices will be staffed by representatives of the Division who, after training in Washington, will be able to help business men and manufacturers having difficulty with priorities questions.

Two members of the Priorities Division's executive staff, L. Edward Scriven and E. C. Laird, Jr., both assistant deputy directors, will be in charge of the regional field offices.

Four offices opened last month in Boston, New York, Philadelphia, and Chicago. Others will follow soon.

Guayule Legislation Introduced in House

On June 11 was introduced in the House of Representatives a bill known as H.R. 5030 "To provide for the planting of 45,000 acres of guayule in order to make available a domestic source of crude rubber for emergency and defense uses." The bill introduced by Representative Anderson of California was referred to the Committee on Agriculture, and, as this is written, the Committee is in process of collecting information and advice from various government units that might be interested.

The bill would create in the Department of Agriculture a $25,000,000 corporation known as the "Federal Guayule Rubber Corp." authorized: to acquire by purchase, license, or other agreement the right to operate under patents now held by Intercontinental Rubber Co. or its subsidiaries, relating to the planting of guayule or the extraction of rubber therefrom, and to acquire such property, process, records, and data as are necessary to such operation; to acquire rights to the necessary land and arrange for the planting of not more than 45,000 acres of guayule in the United States for the production of rubber and additional planting material; to arrange for the production of guayule rubber; to sell the product and to use the funds so obtained for replanting and maintaining an area of 45,000 acres of guayule inside the U. S.

The developments of the Intercontinental Rubber Co. to date include the result of about 25 years' research and experimental work, the principal fruits of which are, first, a much improved guayule plant that has a high rubber content and at the same time other characteristics essential for commercial cultivation and, second, a developed technique for collecting, treating, and planting the seed and for raising and transplanting the seedlings. Intercontinental Rubber Co. has long been in the commercial production of guayule rubber in Mexico and is now importing this product into the United States at the rate of about 5,000 tons per year.

For the past 10 years guayule development work has been concentrated at a large experiment station in California where there are about 700 acres of growing shrub, greenhouses, laboratories, shops, and agricultural equipment and enough newly planted seed in nursery beds to supply 2,000 additional acres of field plants early in 1942. In addition there is now on hand approximately 14,000 pounds of seed suitable for planting. At this experiment station is also an extraction plant of approximately the same capacity as the commercial units operated by the company in Mexico. The California plant has been operated only intermittently, but this year produced more than 200 tons of rubber which were promptly sold to rubber manufacturers in Los Angeles.

Guayule seed is planted in nursery beds equipped with sprinklers, and one year later the seedlings are transplanted to non-irrigated fields where the most economical life from the standpoint of production cost is said to be four or five years, although for a further period of five years the rubber content of the shrub continues to increase at a rate sufficient to more than offset the continuing expense for land rental and cultivation.

It is not claimed that the production cost of domestic guayule rubber is competitive with the production cost of *Hevea* rubber in the Far East, and as a matter of fact, the wide swings in world rubber prices have prevented the company from expanding the domestic production on a large scale. While this might be done at present price levels, there is no assurance as to how long these levels may continue. It would be at least three years from the time of planting seed until the shrub should be harvested for milling. However the company has available a considerable seed supply and a small acreage of planted shrub that provides a starting point for a rapid expansion.

It is understood that the yield of underesinated guayule after three years of growth is such that 45,000 acres would produce approximately 15,000 long tons at a cost in the neighborhood of 20 cents a pound. However after seven years of growth, experience has indicated a yield of approximately 50,000 long tons at a cost approaching 11¢ a pound.

This bill would afford the Department of Agriculture means in about three years to insure a domestic supply of rubber during a period that might be very critical to the industry if supplies from Far Eastern sources should be interrupted.

Martin Leatherman, Hyattsville, Md., has been awarded U. S. patent No. 2,238,850 covering a new method for mildewproofing and mothproofing rubber coated fabrics by treating the latter, first, with ordinary soapy water and then with cadmium fluosilicate. The resultant reaction causes a cadmium soap to precipitate within the fibers of the fabric. Recommended is but 5/100 of 1% of the cadmium soap, claimed to be twice as effective as copper salts previously used in protecting against mildew; while the fluosilicate stops moths.

Manufacturing Chemists' Association held its annual meeting at Skytop, Pa., and on June 5 elected Lammot du Pont, of the E. I. du Pont de Nemours & Co., Inc., president for a second year; George W. Merck, Merck & Co., and Charles Belknap, Monsanto Chemical Co., vice-presidents; J. W. McLaughlin, Carbide & Carbon Chemicals Corp., treasurer; W. N. Watson, secretary.

Further Progress in Rubber Plant Investigations

Results of the practically complete government-financed survey of rubber growing possibilities in 15 American republics[1] are abstracted below from Progress Report No. 10, U. S. Department of Agriculture, June 16, 1941.

In Brazil the Instituto do Norte at Belem continues extensive nursery plantings. Special seed collections have come from Manaos, and plant collecting journeys were made on the Rio Negro and into the Matto Grosso. Five hundred liters of *Hevea spruceana* and a small lot of *H. benthamiana* from the Instituto left Belem May 30. The Brazilian Government has released at Belem six rubber sheeting machines for use by individual growers, for shipment to cooperating countries to demonstrate the preparation of smoked sheets.

Reports from Peru cover the establishment of nurseries, collection of indigenous *Hevea* specimens and selections, and preparations for test tapping the planting near Oromina. Another government seedling nursery is at Tingo Maris.

In Colombia the seedling growth is satisfactory, although, as with most of the *"Belem strain"* seed, poor germination was obtained, as expected. Nevertheless a small collection at least of this strain of *H. brasiliensis* has been established at many cooperating stations.

The recently organized rubber experimental station at El Palmar, Mexico, plans a nursery for the propagation of high-yielding clones, test tapping, selection work in an old *Hevea* plantation, and the development of the station as a distribution and educational center. As seedlings were already available at El Palmar, 244 high budwood stumps of the Bartlett Philippine shipment were reconsigned to Vera Cruz. Three standard Goodyear clones were sent, and in due time the stumps will be cut back, furnishing budwood for immediate budding of the local seedlings.

Haiti has a cooperative propagation and breeding station in the Grand'Anse Valley at Marfranc, where 60 acres were cleared for planting Philippine budded stumps and for setting up seedling nurseries with seed from the plantation at Bayeaux. The first rubber seed planted in the Valley was put in the nursery April 2. Of the 7,603 budded stumps, representing 132 selected clones, brought from the Goodyear Pathfinder Estate, Kabasalan, P. I., 4,779 were taken to the Marfranc station and apportioned to three separate plantings mainly for inter-crossing and reaction to leaf blight. Certain clones will supply budwood or budded stumps for shipment to the Dominican Republic and South America. A large nursery of seedlings being transplanted as high stumps from spontaneous thickets around the old rubber trees at Bayeaux was started; the seedlings will be used by the Haitian government corporation recently formed to promote a rubber industry.

Reconsigned to the experimental station at Tela, Honduras, were 2,580 budded stumps, representing 48 clones of the Bartlett shipment, which were apportioned to three different gardens. In the selection emphasis on resistance to leaf blight was emphasized. These clones, to be multiplied rapidly for distribution, were put in a garden where some 150,000 seedlings are growing from the 1940 local seed crop. Through cooperation of a subsidiary of United Fruit Co., two breeding gardens were planted on farms accessible from the company headquarters at La Lima.

The Firestone Tire & Rubber Co. has offered the Department of Agriculture four tons of rubber seed from its crop this fall at its Liberian plantation. The seeds will be apportioned to the cooperative project at Belem and the field station at Turrialba to develop leaf-blight resisting seedlings. The anticipated very small percentage of such seedling will be stumped at 12 to 18 months, and the budwood will be used for establishing new clones for distribution and field trials in various countries. This program supplements the more limited plantings at Belem and Turrialba originating from the Goodyear Philippine clonal seed.

Arrangements are under way for distributing the seed crop ripening in September and October for plantings in Honduras, Costa Rica, and Panama. These seedlings, however, because of their nature, can be shipped only where leaf blight does not occur. Goodyear has offered about a million seeds from its plantings in Costa Rica. Existing plantings in Brazil, Peru, Ecuador, Nicaragua, Mexico, Haiti, and Santo Domingo will provide ample seed for immediate local rubber nursery requirements.

[1] See INDIA RUBBER WORLD, Sept. 1, 1940, pp. 56-57; Mar. 1, 1941, p. 57; May 1, 1941, p. 50.

Supply Contracts Awarded

Among the recent listings of supply contracts awarded by the various departments of the United States Government were the following:

NAVY: *acid, hydrochloric,* Stauffer Chemical Co., $8,835; *balloons, sounding,* Dewey & Almy Chemical Co., $50,000; *battery jars, covers, etc.,* Electric Storage Battery Co., $15,321; *cable,* American Steel & Wire Co., $46,226, Anaconda Wire & Cable Co., $2,066,438, Circle Wire & Cable Corp., $22,870, Collyer Insulated Wire Co., $460,825, Crescent Insulated Wire & Cable Co., $405,246, General Cable Corp., $2,441,640, National Electric Products Corp., $120,058, Okonite Co., $1,208,659, Phelps Dodge Copper Products Corp., $948,239, Rockbestos Products Corp., $431,136.50; *floats, life,* Air Cruisers, Inc., $11,250, Sculler Safety Corp., $42,642; *footwear,* Endicott - Johnson Corp., $2,509, Hood Rubber Co., Inc., $73,126, United States Rubber Co., $24,570; *gages,* Yarnall-Waring Co., $12,133; *gaskets,* Garlock Packing Co., $37,923.72; *hose,* Lee Rubber & Tire Corp., $6,600, Manufactured Rubber Products Co., $818; *insulating material,* Plant Rubber & Asbestos Works, $5,676; *manometers,* Taylor Instrument Cos., $5,212; *oil,* Socony Vacuum Oil Co., Inc., $382,800; *ponchos,* Marathon Rubber Products Co., $9,674; *rubber coats,* Cable Raincoat Co., $6,996; *service and materials to assemble cables,* General Cable, $308,350, Phelps Dodge, $88,547, Simplex Wire & Cable Co., $21,332; *smoke mixture,* Monsanto Chemical Co., $43,821; *strips, composition bearing, rubber faces,* Lucian Q. Moffitt, Inc., $20,517; *titanium dioxide,* Titanium Pigment Corp., $169,484; *webbing,* Martin Bros., Inc., $27,500; *zinc,* New Jersey Zinc Co., $51,089.40, American Zinc Sales Co., $20,351.25.

WAR: *balloons,* Dewey & Almy, $1,817; *belts, ammunition,* Russell Mfg. Co., $64,135; *cable,* General Cable, $1,058, General Electric Co., $711,537, General Electric Supply Corp., $5,120, Okonite, $372,388, John A. Roebling's Sons Co., $9,579; *cables and reels,* Roebling, $103,439; *carriers,* Goodyear Tire & Rubber Co., $294,690; *chemicals,* E. I. du Pont de Nemours & Co., Inc., $8,960.54; *cords, extension,* GE, $16,563; *cushions, parachute,* B. F. Goodrich Co., $20,600; *duck, cotton,* Mt. Vernon Woodbury Mills, Inc., $29,900; *educational order for outer wings,* Goodyear Aircraft Corp., $1,653,833; *footwear,* Converse Rubber Co., $126,250, Endicott-Johnson, $230,811, Goodyear Footwear Corp., $130,620, Goodyear Rubber Co., $133,453, Hood, $568,232, Mishawaka Rubber & Woolen Mfg. Co., $40,336, Servus Rubber Co., $178,230, Tyer Rubber Co., $140,840, U. S. Rubber, $1,158,741; *gaskets,* Victor Mfg. & Gasket Co., $686; *grinding wheels,* Carborundum Co., $1,702; *hose,* H. G. Davis, Inc., $1,758; *inner tubes,* Firestone Tire & Rubber Co., $5,656; *mountings,* Goodyear Tire, $1,759; *plaster, adhesive,* Marsales Co., Inc., $31,419; *raincoats,* Kay Sportswear Co., $221,687, Marathon Rubber Products Co., $481,907, U. S. Rubber, $915,310; *scales,* Exact Weight Scale Co., $7,791; *tape, adhesive,* Arno Plaster Corp., $4,250, Kendall Co., $48,128; *testing machines,* Baldwin Locomotive Works, $7,190; *tires,* Seiberling Rubber Co., $47,781; *vests, life preserver,* Goodyear Tire, $155,208; *webbing,* Russell, $37,770; *wheel and brake assemblies,* Goodyear Tire, $848,021; *wheels, tires, and tubes,* Goodyear Tire, $2,647; *wire,* Acorn Insulated Wire Co. Inc., $2,500.78, Anaconda, $532,000, National Electric $2,305.50, Okonite, $644,700, U. S. Rubber, $3,143,250.

Agency to Provide Business Men with Means to Get U. S. Orders

Jesse Jones, Secretary of Commerce, early in his regime created the Service and Information Office, Room 1060, Department of Commerce, Washington, D. C., to provide a centralized place in the government where the business man can secure specific information as to how and whom to contact when attempting to sell to or transact business with all governmental agencies, especially in the matter of national defense. Because of decentralized purchasing facilities, those interested are advised to communicate by mail direct with the Office, and, if necessary, personal interviews later can be arranged with a minimum of inconvenience to all concerned.

EASTERN AND SOUTHERN

Standard's Synthetic Expansion to Include Butyl Rubber

At the annual meeting of stockholders of the Standard Oil Co. of New Jersey at Flemington, N. J., June 3, W. S. Farish, president, revealed that the subsidiary, Standard Oil Co. of Louisiana, already operating a $3,000,000 Perbunan plant with a 2,000-ton per annum capacity, will expand its production of synthetic rubber at Baton Rouge, La., to 15,000 tons annually. The expansion will provide annually for 5,000 tons of butyl rubber, Standard's new mono-olefin-diolefin copolymer, and 10,000 tons of the Perbunan type. The new project, which also calls for the production of 20,000,000 gallons of alcohols as well as raw materials for the synthetic rubbers, will involve the expenditure of from $12,000,000 to $15,000,00 in the next 15 months. Full production of the projected expansion is expected by the end of 1942. Priority has been granted by the Office of Production Management to assist the Louisiana firm in obtaining construction materials for the new plant.

Standard Oil (N. J.) also revealed in regard to its business relations with Germany that only 0.6% (formerly 2.2%) of the firm's outstanding shares is now held by interests identified with I. G. Farbenindustrie, A. G. Two jointly owned United States companies, Standard-I.G. Co. and Jasco, Inc., which were organized to handle hydrogenation and related processes, are now wholly owned by Standard, which acquired the I. G. stock interest soon after the outbreak of war. The most important processes under the Jasco arrangement are for the production of synthetic rubber. Jasco, Inc., retains the exclusive rights to Jasco processes in the United States and the French and British Empires; while I. G. has the rights in the rest of the world.

Singer Sewing Machine Co., 149 Broadway, New York, N. Y., has introduced a process of obtaining a durable, exact reproduction of a woman's figure to facilitate dressmaking. A customer desiring the form, goes to the Singer Shop and dons an undergarment supplied by the company. Then a Singer expert molds a new plastic material which has been heated to become pliable, so that it conforms exactly to the body, and within a few minutes the thermoplastic hardens into a perfect mold of the figure. The thermoplastic material combines rubber with a variety of waxes, but no solvent is used. The rubber and waxes are melted together; then knit goods are run through the vat and saturated.

Nearpara Rubber Co., Trenton, N. J., is operating full time. President Benjamin M. Rosenthal reports there is a much better demand for reclaimed rubber than there has been in quite a while.

Modern Plastics Magazine, 122 E. 42nd St., New York, N. Y., is sponsoring its Sixth Annual Modern Plastics Competition, and any plastic object or product will be deemed eligible if it has been designed or has reached the market since September 1, 1940. The final deadline for all entries is September 8, and prize winners will be announced in the November, 1941, issue of the magazine. As each entry is submitted, it will be relegated to one of the following groups: (1) Architecture; (2) Business and Office Equipment; (3) Displays; (4) Furniture; (5) General Housewares; (6) Major Household Appliances; (7) Lighting; (8) Industrial; (9) Jewelry and Novelties; (10) Military and Defense; (11) Objects of Art; (12) Packaging and Closures; (13) Radios and Musical Instruments; (14) Scientific; (15) Sporting Goods, Games & Toys; (16) Transport; (17) Wearing Apparel; (18) Miscellaneous.

Thermoid Co., Trenton, N. J., through President F. E. Schluter has announced that, in line with the company's program of improvement and expansion of its industrial rubber products, it has added to the staff of its Rubber Division, R. E. Spencer Geare, who will concentrate on improving Thermoid's Multiple-V Belt and F. H. P. Belt programs and the expansion of V-belt sales. Mr. Geare during the past quarter-century has held sales and engineering executive positions with several firms.

Thermoid Rubber Division is expanding its industrial rubber products program. Besides V-belts—both multiple and fractional horsepower—which Thermoid has been selling for the last three years—the company is now marketing a complete line of V-sheaves and pulleys, making it possible for Thermoid distributers to offer complete V-belt drive service and equip them to engineer and install V-belt drives from a quarter horsepower to a thousand horsepower. Detailed information on Thermoid V-belt drives is contained in a simplified manual which covers Thermoid multiple and fractional horsepower V-belts and drives. This addition makes the Thermoid industrial rubber products line one of the most complete in the industry, including all types of transmission, conveyer, and elevator belting, wrapped and molded hose, packings, industrial brake linings, rubber covered rolls, and pulley lagging.

Oscar W. Ehrhorn, referee in bankruptcy for Overman Cushion Tire Co., Inc., in his report relating to final disposition of funds held by the trustee, recommended payment of $3,573.28 for trustee's and referee's commissions and counsel fees. The balance of $834.81 will be consumed in payment of expenses incurred during the period of administration from September 13, 1937, to April 20, 1939. Accordingly no dividend will be paid to either general or priority creditors.

Nickerson Tire Cord Process[1] Available on Royalty Basis

The Cotton Research Foundation, Memphis, Tenn., following several years of laboratory study by Foundation Scientists as well as laboratory and field tests conducted by the Firestone Tire & Rubber Co., Akron, O., on the Foundation's improved cotton tire cord manufactured under a new process covered by patent application, now is releasing the Nickerson process to the tire cord industry for commercial use. Acceptable companies will also be given all other information and findings pertinent to the patent applied for and can inspect all engineering data and drawings and test results in connection with operations under this process at the Firestone plant. Firestone tests are said to have confirmed the Foundation's claims of a 35% greater breaking strength and a 300% longer flexing life over conventional cotton cord of the same gage.

However in order to amortize at least a part of the heavy expense of this research project, the Foundation is soliciting $500 from all firms securing information and privileges relating to the process. Those companies which already have contributed will receive due credit when the process is released to them. The royalty charge for use of the process is 1/50¢ a pound, and the initial contribution of $500 will be credited against royalty payments until absorbed. The decision to require royalty payment was made in the hope that ensuing funds would allow an expansion of project activities.

The work of the Foundation has been financed by private subscriptions, which obviously have been in very substantial amounts. Besides manufacturers who already have contributed so heavily to the maintenance of this research, the Foundation has decided to make the results available without delay to other manufacturers who care to make a nominal contribution of $500. In setting the figure at this level the Foundation feels it has specified an amount which a considerable number of firms will readily pay, particularly in view of the fact that they will receive the right to utilize a valuable process now ready for commercial application, with the understanding that their entire contribution may be applied against the royalty charges for use of the process. In addition, the basic findings of the Mellon Institute on the tire cord process may be of great practical significance.

National Association of Waste Material Dealers, Inc., 1475 Broadway, New York, N. Y., has appointed a permanent Defense Committee to represent Scrap Rubber, consisting of Edward B. Friedlander (Lowenthal Co.), and Julius Muehlstein (H. Muehlstein & Co., Inc.), co-chairmen, and Nat E. Berzen (Nat E. Berzen, Inc.), Alex Schulman (A. Schulman, Inc.), and Irwin M. Desser (Desser Tire & Rubber Co.).

[1] See India Rubber World, Oct. 1, 1940, p. 38; Jan. 1, 1941, p. 53.

U. S. Rubber Personnel Changes

United States Rubber Co., 1230 Sixth Ave., New York, N. Y., through Emmet Sheahan, general manager of the tire division, last month announced several appointments in the division. Arnold F. Van Pelt has been named assistant general manager; F. S. Carpenter, production manager; Howard N. Hawkes, general sales manager; Irving H. Johnson, general control manager; and Harmon F. Newell, sales and production coordination manager. Headquarters for these executives will be in the New York office. Each man has been with the company several years.

John P. Coe, general manager, Naugatuck Chemical Division of U. S. Rubber, also at 1230 Sixth Ave., has announced the following changes in organization, effective June 20. John E. Caskey, formerly factory manager and with the firm since 1915, has been appointed assistant general manager. Arvid J. Anderson, who has been control manager, has been named general control manager. Robert E. Casey, previously sales manager for rubber chemicals and reclaim, is now general sales manager of the Division. To fill the position left vacant by Mr. Caskey, Philip E. Rice has been made factory manager. Other new appointments are: William F. Tuley, sales manager for rubber chemicals and reclaim; Donald L. McCollum, general superintendent; George A. Graham, chief engineer; and Raymond J. Frick, control manager.

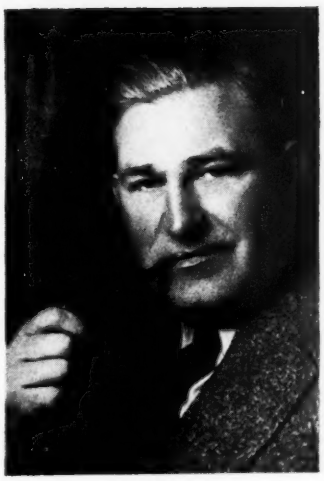
We have also been informed that the following men will remain in their former capacities to complete the new organizational arrangement: Morris G. Shepard, development manager; Thomas G. Richards, sales manager for latex, Lotol, and Dispersite; William Valentine, sales manager for heavy chemicals, and M. G. Couderchet, manager of Naugatuck Aromatics, 12 E. 22nd St., New York.

New Canadian Organization

Naugatuck Chemical Division has joined with Dominion Rubber Co., Ltd., in establishing a new Canadian corporation, Naugatuck Chemicals, Ltd., to be operated at Elmira, near Kitchener, it was announced on June 26 by P. C. Jones, Dominion president, and Mr. Coe, who will also be vice president of Naugatuck Chemicals, Ltd. The new chemical plant will produce aniline oil, a vital product required by the Canadian Government for war purposes. It will also produce accelerators, antioxidants, and other chemicals vital to Canada's rubber industry.

Tire Dealers Meet

U. S. Tire dealers last month met in 35 cities throughout the nation to discuss advertising, merchandising, and selling plans. Featured were four sound movies. The first, "U.S. Products on Parade," shows the merchandising value of the "U.S." franchise and offers a practical selling plan, giving the place of each tire in the plan and its possibilities for dealer profit. The second film presents a pic-



John E. Caskey

turized version of the U. S. Preferential Poll, demonstrating through comparative figures and actual views of the poll in operation that U.S. tires are the favorites in many cities. A third picture covers every phase of "U.S." advertising and sales promotion, reviews the 1941 advertising and dealer helps, and shows the new national advertisements in color. The fourth film is devoted to principles of retail selling and dramatizes sales methods most successfully used by "U.S." dealers.

Films and equipment will be available for distributers' associate dealer meetings.

Alice Mill Reopened

U. S. Rubber June 20 announced receipt from the United States Army Air Corps of an educational order for the production of barrage balloons. A presently closed plant in Woonsocket, R. I., is being equipped for the balloon production. The experimental type and quantity of balloons to be produced at Woonsocket will include the balloon and rigging, but not the ascension cables. Neoprene will be used in making the balloon fabric.

To Eliminate Radio Static Interference

A powder developed by U. S. Rubber to eliminate from automobiles all radio static interference and static shock caused by the friction of rotating parts, including wheels, fan belts, and tires, is being marketed under the trade name U. S. Automotive Static Neutralizer through the company's tire dealers and branches. Application is made with the tires on the car. Tubes are deflated, valve cores removed, powder blown in with an applicator, and tubes inflated.

Acme Rubber Mfg. Co., Trenton, N. J., will erect a one-story brick and steel addition to its plant on East State St. The structure, 250 by 120 feet, will cost $40,000 exclusive of new machinery and equipment. Acme has been in need of additional manufacturing space for some time.

Armstrong Cork Co., Lancaster, Pa., through President H. W. Prentis, Jr., has declared that new formulas increasing the use of wood flour with a consequent cut in the amount of cork consumed in linoleum manufacture will prevent any serious dislocations in the industry as a result of the recent OPM order establishing mandatory priorities in cork. The trend to light colors has increased the use of wood flour in place of cork, and today cork is used only in plain colored and jaspe linoleum, a relatively small part of the floor covering business. Mr. Prentis further stated that ample supplies of raw cork were available in Portugal and North Africa, but in view of the shortage in shipping space the OPM order was in part to create a governmental stock pile of cork. He also pointed out that such cork as is used by Armstrong for linoleum is a by-product obtained from producing other commodities made of cork, adding:

"It is probable that we will be permitted to manufacture these other products—many of which are required in defense work—in sufficient volume to make available a substantial portion, if not all, of the fine by-product cork used in linoleum manufacture, and that permission will be granted to use such quantities of this by-product cork as are essential to continuing the manufacture of linoleum."

M. E. Wallace Co., manufacturer, refiner, and importer, Sunbury, Pa., has announced that C. E. Reeder has succeeded Marshall T. Clark and will have charge of sales.

Martindell Molding Co., Ewing Township, Trenton, N. J., recently installed two new presses in its new addition. The company continues to operate with three shifts.

The Tire Rebuilders Guild, Inc., recently was formed by twelve retreading shops in and around Metropolitan New York to enlarge the general treading market and to secure more of the total business for members by means of a quality-shop identification program. New members will be admitted upon unanimous vote of the charter members. Officers of the Guild follow: president, H. P. Baran; vice president, Thomas Gallagher; secretary-treasurer, Theodore Kolisch; consultant and inspector, George J. Burger.

Pierce-Roberts Rubber Co., Trenton, N. J., continues busy with two shifts. President Harry W. Roberts has been on a lengthy business trip through New York State.

The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., by unanimous vote recently won the annual award of the National Advertising Agency Network for "The Best Advertising Campaign in Business Papers." James J. DeMario is the Division's advertising manager; while Roland G. E. Ullman, 1520 Locust St., Philadelphia, Pa., is advertising agent.

OHIO

New Goodyear Plant

Ground has been broken for a second large aircraft-parts building in Goodyear's industrial defense area at the Akron airport, according to Paul W. Litchfield, chairman of the board, Goodyear Tire & Rubber Co. The new plant will be wholly financed and owned by Goodyear Aircraft Corp., but will be adjacent to and operated in conjunction with the big government-financed parts building under construction since April 12. The new structure, of brick, steel, and glass, and single story with mezzanine, will have 85,000 square feet of floor space. Two smaller supplementary buildings are included, one for the steam plant, the other for drop hammer facilities. Provision has also been made for completely blacking out the plant, and a special ventilating system will be installed for this purpose. The new plant, without equipment, will cost about $400,000, and its completion is expected late this summer.

Goodyear Tire has begun construction of the government-financed Chemigum plant announced on page 59 of our June issue, which is expected to be ready by late autumn. The recently completed Goodyear-financed Chemigum plant on Weston Rd. soon starts production of 2,500 tons a year for the company's own immediate uses.

President E. J. Thomas received from Mr. Litchfield his quarter-century service pin on May 25 as the feature of "Eddie Thomas Day" festivities at Seiberling field.

Christensen Promoted

Monsanto Chemical Co., St. Louis, Mo., through Vice President G. Lee Camp, has announced the appointment of C. W. Christensen as general manager of sales of the Rubber Service Department, Akron, O., to succeed the late E. J. Smail. Named to Mr. Christensen's former post, assistant general manager of sales, is James F. Hand, of the Rubber Service sales department.

Mr. Christensen is a native of Akron (October 27, 1899) and an alumnus of Akron University. While attending the university he gained experience by working for the following local companies, B. F. Goodrich Co., Firestone Tire & Rubber Co., and Miller Rubber Co. In 1922 he became a research laboratory assistant at the Rubber Service Laboratories, now the Rubber Service Department of Monsanto. In 1923, Mr. Christensen was transferred to sales work and in 1932 was made assistant general manager of sales. For several years he has been treasurer of the Division of Rubber Chemistry of the American Chemical Society. Married, he has two sons, Chester and Edward.

Mr. Hand was born August 3, 1906, in Cincinnati, O. Following his graduation from Cornell University, he remained there a year as an instructor in chemistry. Then in 1928 he found employment as a chemist at the American Rolling Mill Co., Middletown, O. Next he was engaged in a similar capacity at the Goodrich plant in Akron. In 1930, Mr. Hand became a salesman in the Rubber Service Department. He is married and has a son and a daughter.

C. W. Christensen

General Opens Plant in Venezuela

William O'Neil, president of The General Tire & Rubber Co., Akron, and Joseph A. Andreoli, vice president and general manager of The General Tire & Rubber Export Co., on June 17 attended the opening ceremonies of the company's new plant, Compania Anonima Nacional, Manufacturera de Caucho y "Neumaticos General", at Apartado 987 in Chacao, a suburb of Caracas, Venezuela. Completely modern in equipment and methods, the plant is expected to produce 200 tires and a like number of tubes daily. Capitalized at 2,125,000 Bolivares (approximately $700,000), the plant will be managed by Dr. J. M. Travieso Paul, president, Ramon E. Tello, general manager, and Henry J. Conroy, of Akron. Production started at the completion of the opening ceremonies.

Mr. O'Neil was toastmaster at the recent Aviation Day dinner of the East Akron Board of Trade at which the guest speaker, Capt. C. E. Rosendahl, U. S. Navy, urged high-calibre young men to enter Naval Aviation Service and also emphasized the value of lighter-than-air-craft in warfare.

The Timken Roller Bearing Co., Canton, has appointed Harry McCool, Jr., southwestern sales representative for the Steel and Tube Division. His territory includes Kansas, Louisiana, Oklahoma, Arkansas, and Texas, with headquarters at Dallas. Mr. McCool joined Timken in 1928 as a hot mill operator, became superintendent of the Timken Tube Mill at Wooster in 1935, and in March, 1941, joined the sales department of the Steel and Tube Division.

Koroseal Output to Be Quadrupled

Plans for the immediate construction near Louisville, Ky., of a large manufacturing plant for making koroseal have been revealed by John L. Collyer, president of The B. F. Goodrich Co., Akron. This plant, given a preference rating for construction materials and machinery by the OPM, is expected to be operating within six to eight months. It will quadruple koroseal output and is the third major expansion in koroseal capacity during the past year and a half. Mr. Collyer stated that increasing national defense requirements for koroseal prompted the move.

To be located on Bells Lane, seven miles southwest of Louisville near the Ohio River, the plant will be constructed on a 20-acre site in five separate buildings with a combined floor space of 75,000 square feet. Four units will be used for the manufacture of raw materials and the fifth will be the steam power plant.

The Louisville site, serviced by the Kentucky & Indiana Terminal Railroad, was chosen because of ready access to abundant low-cost power, coal, and other raw materials used in making the synthetic.

During the past 18 months a new raw materials production unit for koroseal was erected at Niagara Falls, N. Y., and a $300,000 processing plant, converting the material into finished form for commercial and domestic use, was constructed at Akron. Then on June 1 the company announced that expanded manufacturing facilities had been placed in operation at Niagara Falls, doubling that plant's koroseal capacity.

For some months substantially all of Goodrich's koroseal output has been diverted to national defense use, the company said, as an insulating and sheathing medium for electrical wiring and cable on naval vessels and aircraft, for coating airmen's suits for high-altitude operations, and numerous other military applications. Besides excellent electrical properties, koroseal can be made nonflammable and resistant to the diffusion of mustard and hydrogen gases.

Personnel Changes

The board last month elected George T. Kilmon assistant secretary to succeed the late J. L. McKnight, and Edward M. Martin was named assistant treasurer. Mr. Kilmon, on the Goodrich legal staff the last 16 years, will also be in charge of the company's law department. He joined Goodrich in July, 1925, after graduating from the University of Virginia. Mr. Martin came to Goodrich in February, 1920, as a member of the Akron credit department, later going to Toledo, Atlanta, and New York, in managerial capacities for the department. In 1931 he was assigned to duties in Europe, Africa, and the Near East, remaining abroad, except for short business trips home, until his return from France on April 15. He is a Harvard alumnus,

served with the First Division, U.S. Regular Army in the World War, and was commissioned a first lieutenant in the Seventh Field Artillery. After the war, he attended Cambridge University in England for a short time.

Clyde DeLong has been named operating manager of the Goodrich mechanical sales division, according to W. S. Richardson, general sales manager. Mr. DeLong, a graduate of Miami University, joined the company in January, 1928, as a clerk in the mechanical division factory offices, and six years later was transferred to the heel and sole sales department for three years. After two years as a mechanical goods salesman in the Chicago district he was named assistant operating manager in 1939 and a year later was transferred to the New York district sales force.

David M. Goodrich, chairman of the board at Goodrich, has been named to the panel of arbitrators of the American Arbitration Association to serve as arbitrator of disputes between business men engaged in national defense production. The addition of Colonel Goodrich to the panel, members of which serve without pay, was the result of a 20% rise in commercial disagreements being submitted to arbitration.

The Association is a non-profit-making, non-partisan organization providing nation-wide facilities for settling commercial and industrial controversies.

Colonel Goodrich is also retiring president of the Industrial Conference Board.

Seiberling Rubber Co., according to President J. P. Seiberling, is operating its Akron plant at the peak of its 20-year history, partly because of defense orders, but also owing to increased demand for consumer goods. Engaged wholly in national defense production are 6.75% of the company's employes; while about 8% of Seiberling's total output is of such defense items as bullet-seal inner tubes, heavy duty tires, gas mask face blanks, etc. Mr. Seiberling further declared that last year the company used about 10% more crude rubber than in the former record year of 1937, and 1941 consumption to date is approximately 25% higher than in 1940, when the plant milled about 6,000,000 more pounds of rubber than in 1937.

NEW ENGLAND

Prominent Rubber Technologist

John Twiss Blake, director of research at the Simplex Wire & Cable Co., Cambridge, Mass., has written many papers alone or as co-author on vulcanization, water absorption and deproteinized rubber, carbon black, explosives, rates of organic reactions, reenforcement theory, and the oxidation of rubber. Dr. Blake is co-editor with C. C. Davis of the

Photograph by Bachrach

John T. Blake

A. C. S. monograph, "The Chemistry and Technology of Rubber", and for several editions prepared the review on rubber research in the "Annual Survey of American Chemistry." He also presented two papers at the Rubber Technology Conference in London in 1938 and has many patents to his credit.

He was born in Boston, Mass., on May 16, 1901. After graduation from English High School in 1917, John Blake matriculated at Tufts College Engineering School and in 1921 graduated with honors and a degree of bachelor of science in chemical engineering. In 1924, Massachusetts Institute of Technology conferred upon him a Ph.D. for his work in chemistry and chemical engineering.

During 1921-23, Dr. Blake worked part time on explosives chemistry for the United States Ordnance Department and taught at his Alma Mater, Northeastern University, and M. I. T. Graduate School. In 1924 he joined Simplex as a research chemist, was put in charge of chemical research and development in 1935, and in 1940 was made director of research in charge of electrical as well as chemical activities.

He has belonged to the Division of Rubber Chemistry of the American Chemical Society for 17 years, having served on the executive committee several terms and now is on the planning and nomenclature committees. John Blake is also a member of the Rhode Island Rubber Club and the New York and Boston groups and is a past chairman of the latter organization. He is a Fellow of the American Association for the Advancement of Science and of the New York Academy of Sciences and is on the committee on insulation of the National Research Council. His name appears on the rosters of the A. C. S., American Institute of Chemical Engineers, Phi Delta, Alpha Chi Sigma, and Highland and Port Norfolk Yacht clubs. Despite his technical activity, Dr. Blake finds time for his hobby—sailing and cruising—with an occasional fling at golf.

He is married and has a son, 12.

Smaller Business Association of New England, Inc., Park Square Bldg., Boston, Mass., in a campaign to enlist the full participation of smaller business companies in the national defense program, is sponsoring and distributing on request a patriotic label, about 2¼ inches wide by 1½ high, consisting of a red, a white, and a blue stripe, on which appear the words: "The Smaller Business Firms of New England, The Support of Their Management, The Cooperation of Their Workers Are Pledged to National Defense."

Rhode Island lists as rubber manufacturers 14 firms operating 17 plants in the state and employing between 7,500 and 10,000 workers at varying seasons, comprising one of the state's largest industries. May payrolls totaled $497,458, 17.5% above the April figure and 55.5% above that of May, 1940.

The American Insulated Wire Corp. plans two new one-story, concrete and steel buildings for its plant at 610 Manton Ave., Providence, R. I. One building, to be erected in two sections, will be 35 by 72 feet and 75 feet by 80, costing approximately $40,000, and the other will be 73 by 137 feet, to cost $10,000. These buildings will be utilized for the general purposes of the concern.

MIDWEST

Oil for Synthetic Rubber

A round-table discussion of the place of the petroleum industry in the national defense recently took place before the annual membership dinner in Tulsa, Okla., of the Kansas-Oklahoma Division of the Mid-Continent Oil & Gas Association. Dr. Gustav Egloff, director of research, Universal Oil Products Co., Chicago, Ill., was one of the four participants in the round-table; while Wm. P. Steven, managing editor, *The Tulsa Tribune*, was moderator. Below appear one of the questions and that part of the reply relating to synthetic rubber.

MODERATOR STEVEN: "Again thinking about 'bottlenecks', Dr. Egloff, most of us know that kerosene, gasoline, and lubricating oils come from a barrel of crude oil. However I remember seeing an exhibit at the International Petroleum Exposition in Tulsa last year which showed a whole tree of products growing out of a barrel of crude oil. *Would you tell us what other defense products the oil industry can supply, and what 'bottlenecks' it can widen with these products?*"

DR. EGLOFF: "One of the possible 'bottlenecks', which can be relieved by the oil industry, is—as I see it—the source of our rubber. The oil industry has the raw materials to produce synthetic rubber, superior to the natural, in quantities far in excess of that which we are now consuming. Our present consumption

rate of natural rubber in the United States is 1,200,000,000 pounds a year. The oil industry could supply the raw material to produce butadiene and styrene, which can be acted upon to produce synthetic rubber at the rate of 85,000,000,000 pounds a year, without lessening the production—mark you—of any of the other products required for peacetime or national defense needs.

"I foresee the possibility of our being cut off from the natural rubber supplies of the Far East, of England, and of South America also. And I see the potential of the U. S. A. producing its own rubber from its own source material, at a price level within the range of the natural rubber. There are tires on the market at this moment made from synthetic rubber produced from petroleum. It is estimated that, when we go into production on a large scale—and I believe we should—plants can be built in a year's time to supply our total national requirements, at a cost of no more than about $200,000,000. I submit that this is no sum to be quibbling about in an emergency situation. Our synthetic rubber tires can be marketed at a price level of about 5% or 10% at the outside, above that which we are now paying—and the synthetic rubber is about 30% better than the natural rubber in wearing quality."

Thirty-one rubber companies in the Midwest recently reported paying 17,737 employes $490,000 in wages, respective gains of 4.4% and 0.6% in a month.

National Safety Council, 20 N. Wacker Drive, Chicago, Ill., recently issued data on the nation's 1940 industrial injury experience, which made a better showing over 1939 despite all-output production and soaring employments last year. For all industries, which included 5,163 units, working 7,173,924,000 man-hours, the frequency rate,[1] at 12.52, was unchanged from 1939, but the severity rate[1] was down 1% to 1.44. The rubber industry, with 55 units and 133,906,000 man-hours, was eighth with a frequency rate of 8.27, down 1% from 1939, when it was tenth on the list, and fifth (unchanged from 1939) with a severity rate of 0.65, which, however, was 19% above the 1939 figure.

[1] Frequency rate is the number of disabling injuries per 1,000,000 man-hours of exposure. Severity rate is the number of days lost per 1,000 man-hours of exposure, including charges for permanent disabilities and deaths.

CANADA

The Ontario Legislation now in session has passed an amendment to the Ontario Highway Traffic Amendment Act which prohibits rebuilding of bus, truck, and passenger automobile tires in Ontario unless such tires carry half-inch high lettering clearly indicating that they have been rebuilt. "Rebuilding," according to the amendment, "means the imposing of a new tread on a used tire, or the altering of an old tread so that it will resemble a new tire."

Arthur H. Carr

Dominion Department of Munitions and Supply, Ottawa, Ont., recently awarded the following contracts: *clothing,* Dominion Rubber Co., Ltd., $74,072; *dockyard stores,* Dominion, $5,138; *land transport,* Dunlop Tire & Rubber Goods Co., Ltd., $76,064, Firestone Tire & Rubber Co. of Canada, Ltd., $202,211, Goodyear Tire & Rubber Co. of Canada, Ltd., $498,349.

Canadian Credit Men's Trust Association, Quebec Division, recently held its first conference, at which Y. Beausejour, credit manager of the B. F. Goodrich Co. of Canada, Ltd., gave the welcoming address.

Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont., plans redeeming some of its preferred shares through its redemption fund, in accordance with its by-laws which provide that 8% of net profits be set aside each year, but not exceeding $60,000, for redemption of preferred shares, $50 par, at a price not above $52.50 and accrued dividends. When the redemption fund reaches $250,000 and enough preferred shares cannot be purchased in the open market or by tender to reduce the amount under $250,000, the company is obliged to call the required number of shares for redemption by lot. President A. G. Partridge by letter invited shareholders so desiring to sell stock to the company at $52.50 per share and accrued dividends. Such offers were good until June 24, when the tenders were considered, but the holders' rights to receive the regular quarterly dividend payable July 2 were not affected by the sale. Payment for shares purchased by the company occurred on June 30. On December 31, 1940, the company's balance sheet put the preferred stock redemption fund at $219,588. Addition of $60,000 from 1940 net profits brings the total to $279,588. This would permit redemption of approximately 5,300 preferred shares. At the end of 1940, 119,080 preferred shares were outstanding. The original issue was 120,000 shares.

A Goodyear blimp is touring Canada in aid of the Victory Loan campaign. On arrival in Toronto from Akron it carried a 300-foot banner urging Canadians to purchase bonds. It is equipped with a music loudspeaker which can be heard for miles.

OBITUARY

Arthur H. Carr

FOLLOWING a six-months illness, Arthur Homer Carr, president and treasurer of the Carr Mfg. Corp., Bristol, R. I., died at his home there on May 26. Prior to organizing the company in 1933, he had been factory manager of the plant of the United States Rubber Co. at Providence, R. I., and as head of the company's export department had traveled extensively abroad. At one time he had been general superintendent of the Revere Rubber Works, Providence. In 1937, Mr. Carr was one of three founders of Carr-Fulflex, Inc., which dealt in rubber products and was separate from the manufacturing company.

The deceased was born in Providence, R. I., August 10, 1878, and educated at the English High School and the Rhode Island School of Design.

When the Bristol Planning Board was organized in 1939, he became its chairman, but retired several months ago because of ill health. Mr. Carr was a director of several organizations, including the Industrial Trust Co., the Lloyd Mfg. Co., the Lawson Products Co., and the Bristol District Nursing Assn. He was a 32nd degree Mason and belonged to St. John's Lodge No. 1, F. & A. M. of Providence, St. John's Commandery, Knights Templar, Palestine Temple, Order of the Mystic Shrine, Providence Royal Arch Chapter, the Elks, and St. Andrew's Chapter of All Saints Memorial Episcopal Church, Providence. His clubs included the Rhode Island Rubber, Anawan, Atlantic Tuna, Bristol Yacht, Brown, Squantum, To Kalon, Barrington Country, New York Athletic, and Jacobs Hill Hunt.

Mr. Carr leaves his wife, a daughter, two sisters, and three nieces.

Funeral services were conducted May 29 in St. Michael's Episcopal Church, Bristol. Burial was in North Burial Ground, Providence.

Carl F. Ogren

AFTER a short illness Carl Francis Ogren, for the past year executive engineer and vice president of the automotive division of the Thermoid Co., Trenton, N. J., died at a hospital there on June 8. He had joined Thermoid on November 21, 1921, as chemist and was subsequently made head of the laboratory, factory superintendent (1937), and chief research engineer (1938). He had also taken out several patents on the construction of flexible joint disks and methods of producing clutch facings.

Mr. Ogren was born in Jamestown, N. Y., June 22, 1894. He was graduated from Cornell University in 1917 with the degree of B. S. in mechanical engineering and later saw service in the World War. He was with the American Bronze Corp., New York, N. Y., 1919-20, and with the Manhattan Electrical Supply Co., Jersey City, N. J., 1920-21.

He belonged to the Society of Auto-

motive Engineers, American Society for Testing Materials, Engineer's Club of Trenton, Loyal Lodge 181, F. & A. M., the Rotary Club, American Legion, Cornell Club of Trenton, and the Grace Baptist Church.

Funeral services were held June 11, with interment in Ewing Cemetery, Trenton.

Mr. Ogren leaves his wife, two daughters, a son, and a sister.

G. W. Blanchard

ON JUNE 3 at his home in Passaic, N. J., died Gilbert Willard Blanchard, one-time rubber executive. Born in West Bridgewater, Pa., January 5, 1855, the deceased first worked as a messenger boy and then for the Pittsburgh S. W. & C. Railroad. His first connection with the rubber industry was in 1882 when he became vice president and treasurer of the Cleveland Rubber Co. and was manager of the Chicago branch. Then in 1895 he went to the Mechanical Rubber Co., New York, as general manager, and when it merged soon after with four other concerns, he was made manager of the Passaic plant of the New York Belting & Packing Co., which later became part of the United States Rubber Co. Mr. Blanchard retired in 1904 and for the next 30 years served as a director of the Passaic National Bank.

A widower, he is survived by a brother and a niece.

Funeral services were held on June 6 at the First Presbyterian Church, Passaic.

Fred Wm. Kramer

PNEUMONIA caused the death, on April 24, of Frederick William Kramer, since 1920 factory manager of The Northern Rubber Co., Guelph, Ont., Canada. Mr. Kramer, who was born in Colchester, Conn., February 8, 1870, first began as a shoemaker in 1888, with the Granby Rubber Co., Granby, P. Q., then was made cutting room foreman in 1900 and factory superintendent in 1907. In 1912, Mr. Kramer became factory manager at the Dominion Rubber Co., St. Jerome, P. Q.

Requiem mass for the deceased, who also belonged to the Knights of Columbus, was said at the Church of Our Lady, Guelph, April 26.

Survivors include the widow, a son, and two daughters.

Edward J. Smail, Jr.

AFTER a lengthy illness Edward J. Smail, Jr., general sales manager of the Rubber Service Department of Monsanto Chemical Co., died June 8 in Akron, O. Born December 22, 1888, in Braddock, Pa., and graduated from Washington & Jefferson College in 1907, he began his business career with Firestone Tire & Rubber Co. and engaged in sales work from 1913 to 1916. Then Mr. Smail became assistant sales manager of Marathon Rubber Co. from

Edward J. Smail, Jr.

which he resigned in 1918 to serve as branch sales manager of National Aniline & Chemical Co.

In 1921, however, with three business associates, Mr. Smail founded the Rubber Service Laboratories, with a plant in Nitro, W. Va., and sales offices and laboratories in Akron. When, in 1929, the Rubber Service Laboratories became Monsanto's Rubber Service Department, Mr. Smail remained as general sales manager.

He was also a director of the First Central Trust Co. and of Seiberling Rubber Co., both of Akron, a 32nd degree Mason, and belonged to Phi Kappa Sigma and the Rotary, Portage Country, and Akron City clubs.

Surviving are his wife and a daughter.

Funeral services were conducted at the Smail home, 94 Conger Ave., Akron, June 11. Interment was in Pittsburgh, Pa.

John M. Hood, Jr.

ON JUNE 16, John Mifflin, Hood, Jr., 61, of Los Angeles, Calif., former head of the Crown Cork & Seal Co., Baltimore, Md., died of a sudden heart attack in Lawrenceville, N. J. After graduating from Princeton University in 1901, Mr. Hood worked for several railroads. In 1907 he became a director of Crown Cork, secretary in 1911, second and first vice presidents, and president in 1914. He retired in January, 1923.

Survivors are a son, two daughters, four sisters, and a brother.

A. G. Dexter—S. W. McCabe

TWO retired employes of the Collyer Insulated Wire Co., Pawtucket, R. I., died recently. Arthur G. Dexter, 59, who passed away May 29, spent 28 years with the company, mostly as traffic manager, then retired in March because of ill health. He is survived by his wife, one daughter, and two grandchildren.

Sylvester W. McCabe, 78, died June 19 after a lengthy illness.

FINANCIAL

Unless otherwise stated, the following results of operations are after operating expenses, federal income taxes, and other deductions. Additional tax charges under the Revenue Act of 1940 have been made against earnings in many reports. Figures in most cases are subject to audit and final adjustments.

American Cyanamid Co., New York, N. Y., and subsidiaries. March quarter: net income, after $1,176,842 deductions for depreciation and depletion and $1,344,967 provision for income taxes, and other deductions, $1,697,372, equal, after preferred dividend requirements, to 60¢ each on 2,618,364 common shares outstanding, compared with $1,467,158, or 53¢ a share, after $845,794 for depreciation and depletion and $578,000 for income taxes, in the first quarter last year; net operating profit, $5,220,012, against $3,668,392.

American Zinc, Lead & Smelting Co., Columbus, O., and wholly owned subsidiaries. March quarter: net profit, $223,452, equal, after quarterly dividend requirements on the $5 and $6 preferred stocks, to 20¢ each on 673,088 shares of common stock, against $79,600, or $1.17 each on 67,953 shares of $5 prior preferred stock, in the first quarter of 1940. Twelve months to March 31: net profit, $740,157, equal to 59¢ a common share, against $354,463, or 2¢ a share, in the preceding twelve months.

Barber Asphalt Corp., New York, N. Y. March quarter: net loss, $234,689, against net profit of $8,414 last year. Twelve months to March 31: net loss, $431,899, against net profit of $653,518, or $1.67 a share, for the year ended March 31, 1940.

Columbian Carbon Co., New York, N. Y., and subsidiaries. March quarter: net income, $1,089,335, equal to $2.03 each on 537,406 common shares, against $1,018,639, or $1.90 a share, in the same period of 1940; cash, $5,136,183, against $3,439,879; net working capital, $8,664,052, against $7,139,720. This year's income included a non-recurring profit of $12,699, or 2¢ a share; whereas the March quarter last year included a non-recurring profit of $185,379, or 34¢ a share.

Monsanto Chemical Co., St. Louis, Mo. March quarter: net income, after provision for income taxes of $2,146,000, $1,354,291, equal to 98¢ a share, against $1,642,037, or 88¢ (adjusted) a share, in the same quarter last year; sales, $14,442,926, 40% above the 1940 figure.

New Jersey Zinc Co., New York, N. Y. March quarter: net profit, $2,813,509, including $85,321 proceeds from patents, equal to $1.43 each on 1,963,264 shares of capital stock, against $1,765,112, including $107,344 proceeds from patents, or 90¢ a share, in the first quarter last year.

Tire Production Statistics

	Pneumatic Casings		
	Inventory	Production	Shipments
1939	8,664,505	57,612,731	57,508,775
1940	9,126,528	59,186,423	58,774,437
1941			
Jan.	9,797,253	5,486,296	4,849,748
Feb.	10,028,803	5,161,267	4,896,340
Mar.	10,148,861	5,685,559	5,517,255
Apr.	9,957,849	5,822,699	6,049,517
May	8,373,324	6,072,823	7,732,828

	Pneumatic Casings		
	Original Equipment	Replacement Sales	Export Sales
1939	18,207,556	38,022,034	1,279,185
1940	22,252,869	35,345,656	1,175,912
1941			
Jan.	2,291,209	2,424,730	133,809
Feb.	2,546,120	2,203,297	146,923
Mar.	2,638,066	2,728,557	150,632
Apr.	2,333,827	3,582,579	133,111
May	2,700,419	4,885,166	147,243

	Inner Tubes		
	Inventory	Production	Shipments
1939	7,035,671	50,648,556	51,190,314
1940	7,916,948	52,237,003	52,214,079
1941			
Jan.	7,632,655	5,112,824	4,473,942
Feb.	7,924,383	4,887,190	4,610,313
Mar.	8,068,646	5,349,202	5,181,198
Apr.	8,142,692	5,495,762	5,371,451
May	7,686,194	5,854,617	6,323,718

	Inner Tubes		
	Original Equipment	Replacement Sales	Export Sales
1939	18,190,630	31,997,906	1,001,778
1940	22,172,452	29,069,547	972,080
1941			
Jan.	2,281,274	2,082,311	110,357
Feb.	2,545,877	1,932,703	131,733
Mar.	2,647,533	2,405,927	127,738
Apr.	2,336,715	2,919,614	115,122
May	2,688,870	3,508,095	126,753

Source: The Rubber Manufacturers Association, Inc. Figures adjusted to represent 100% of the industry.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Chicle Co.	Com.	$1.00 q.	June 16	June 2
American Chicle Co.	Com.	$1.00 extra	June 16	June 2
American Hard Rubber Co.	Pfd.	$2.00 q.	June 30	June 20
Belden Mfg. Co.	Com.	$0.35 irreg.	June 2	May 17
Boston Woven Hose & Rubber Co.	Com.	$0.50	May 26	May 15
Boston Woven Hose & Rubber Co.	Pfd.	$3.00 s.	June 16	June 2
Brunswick-Balke-Collender Co.	Com.	$0.50	June 16	June 15
Brunswick-Balke-Collender Co.	Pfd.	$1.25 q.	July 1	June 20
Canada Wire & Cable Co., Ltd.	"A"	$1.00	June 15	May 31
Canada Wire & Cable Co., Ltd.	"B"	$0.50	June 15	May 31
Canada Wire & Cable Co., Ltd.	Pfd.	$1.625	June 15	May 31
Canadian General Electric Co., Ltd.	Com.	$2.00	June 14	July 1
Carborundum Co.	Com.	$1.75 irreg.	June 30	June 19
Collins & Aikman Corp.	Com.	$0.25	June 2	May 20
Collins & Aikman Corp.	Pfd.	$1.25 q.	June 2	May 20
Crown Cork & Seal Co., Inc.	$2.25 Cv. Pfd.	$0.5625 q.	June 16	May 29
Crown Cork International Corp.	$1.00 "A"	$0.90	July 1	June 30
Detroit Gasket & Mfg. Co.	Com.	$0.25	July 21	July 5
Dewey & Almy Chemical Co.	Com.	$0.35 irreg.	June 16	May 29
Dewey & Almy Chemical Co.	"B"	$0.35 irreg.	June 16	May 29
Dominion Textile Co., Ltd.	Com.	$1.25 q.	July 2	June 14
Dominion Textile Co., Ltd.	Pfd.	$1.75 q.	July 15	June 30
Dunlop Tire & Rubber Corp.	Com.	2% extra	May 21	May 16
Dunlop Tire & Rubber Corp.	Com.	8% final	May 21	May 16
Dunlop Tire & Rubber Corp.	Com.	8%	June 27	May 27
Dunlop Tire & Rubber Corp.	Com	$0.25 extra	June 27	May 27
Dunlop Tire & Rubber Goods Co., Ltd.	A.D.R.	2% extra	.....	.....
Dunlop Tire & Rubber Goods Co., Ltd.	Ord.	8% final	.....	.....
Dunlop Tire & Rubber Goods Co., Ltd.	Pfd.	$0.625 s.	June 30	June 16
E. I. du Pont de Nemours & Co., Inc.	Com.	$1.75 interim	June 14	May 26
E. I. du Pont de Nemours & Co., Inc.	Pfd.	$1.125 q.	July 25	July 10
Electric Storage Battery Co.	Com.	$0.50 accum.	June 30	June 9
Electric Storage Battery Co.	Pfd.	$0.50 accum.	June 30	June 9
Endicott-Johnson Corp.	Pfd.	$1.25 q.	July 1	June 26
Endicott-Johnson Corp.	Com.	$0.75	July 1	June 26
Faultless Rubber Co.	Com.	$0.25 q.	June 25	June 16
Faultless Rubber Co.	Com.	$0.25 extra	June 25	June 16
Firestone Tire & Rubber Co.	Com.	$0.25	July 21	July 5
Firestone Tire & Rubber Co.	6% Pfd.	$1.50 q.	June 1	May 15
Flintkote Co.	Com.	$0.25	June 25	June 14
Flintkote Co.	$4.50 Cv. Pfd.	$1.125 q.	June 15	June 10
Garlock Packing Co.	Com.	$0.75	June 30	June 21
General Electric Co.	Com.	$0.35	July 25	June 27
General Motors Corp.	Com.	$1.00 irreg.	June 12	May 13
General Motors Corp.	$5 Pfd.	$1.25 q.	June 12	May 15
General Tire & Rubber Co.	Pfd.	$1.50 q.	June 30	June 20
B. F. Goodrich Co.	Pfd.	$1.25 q.	June 30	June 20
Goodyear Tire & Rubber Co.	$5 Cum. Cv. Pfd.	$1.25 q.	June 16	May 15
Goodyear Tire & Rubber Co.	Com.	$0.25 q.	June 16	May 15
Goodyear Tire & Rubber Co. of Canada, Ltd.	Com.	$0.625 q.	July 2	June 14
Hercules Powder Co.	Com.	$0.60	June 13	June 25
Hewitt Rubber Corp.	Capital	$0.25 q.	June 16	May 31
I. B. Kleinert Rubber Co.	Com.	$0.20	June 30	June 16
Jenkins Bros.	Com.	$1.00	July 1	June 20
Jenkins Bros.	Non-Vt.	$0.25	July 1	June 20
Jenkins Bros.	Pfd.	$1.75	July 1	June 20
Mansfield Tire & Rubber Co.	Com.	$0.10 q.	June 20	June 10
Mansfield Tire & Rubber Co.	$1.20 Cv. Pfd.	$0.30 q.	July 1	June 16
Midwest Rubber Reclaiming Co.	$4 Pfd.	$1.00 q.	June 2	May 20
National Automotive Fibres Corp.	Com.	$0.15 q.	July 15	June 25
Phelps Dodge Copper Products Corp.	Com.	$0.25	June 10	May 23
Raybestos-Manhattan, Inc.	Com.	$0.375	June 16	May 31
Rome Cable Corp.	Com.	$0.15	July 1	June 12
Russell Mfg. Co.	Com.	$0.375	June 14	May 31
Seiberling Rubber Co.	Pt. Pfd.	$0.62 q.	July 1	June 20
Seiberling Rubber Co.	"A"	$1.25 q.	July 1	June 20
Standard Oil of New Jersey	Com.	$0.50 extra	June 16	May 15
Standard Oil of New Jersey	Com.	$0.50 s.	June 16	May 15
Thermoid Co.	Com.	$0.20 resumed	June 26	June 16
Thermoid Co.	Pfd.	$0.75 q.	June 16	June 3
Tyer Rubber Co.	Com.	$0.50 resumed	May 15	April 24
Tyer Rubber Co.	Pfd.	$1.50 q.	May 15	April 24
United Carbon Co.	Com.	$0.75	July 1	June 14
United Elastic Corp.	Com.	$0.20 incr.	June 24	June 5
United States Rubber Co.	Pt. Pfd.	$2.00 accum.	May 29	May 16
United States Rubber Co.	8% Pfd.	$2.00 q.	June 27	June 20
Westinghouse Electric & Mfg. Co.	Com.	$1.00	May 29	May 13
Westinghouse Electric & Mfg. Co.	Pfd.	$1.00	May 29	May 13

FROM OUR COLUMNS

50 Years Age—July, 1891

A number of prominent manufacturers of recovered rubber, namely, the Philadelphia Rubber Works, Loewenthal & Morganstern, Murray, Whitehead & Murray, the Derby Rubber Co., and the New Jersey Rubber Co., have united in forming the Rubber Reclaiming Co. (p. 271).

Since the threatened jailing of the New Haven directors, railroad men have shown considerable activity in the steam heating equipment line, which necessitates quite a large demand for hose. (p. 288)

With a capital of $350,000 the Boston Woven Hose & Rubber Co. has received its certificate of incorporation, Theodore A. Dodge being president and J. Edward Davis, treasurer. (p. 289)

Bicycle tires alone consume over a million pounds of Para rubber yearly. (p. 289).

Thomson's investigations have demonstrated that in the vulcanization of rubber in the cold way with a solution of chloride of sulphur in carbon bisulphide, the role of vulcanizer is played by the chlorine. (p. xx)

25 Years Ago—July, 1916

Modern cord tires owe their origin to the thread fabric invented by John T. Palmer and first used in racing tires on bicycles in 1893. That Thomas J. Jeffery was first in the field with a thread fabric tire as claimed by some, cannot be verified. The name "cord" tire originated in England, where the principle was first applied to the manufacture of automobile tires in the year 1900.

It was known as the Palmer cord to distinguish it from the lighter Palmer cord bicycle tire. The Silvertown cord tire was invented and patented by Christian H. Gray and Thomas Sloper, of England, and manufactured at Silvertown, England, by the Palmer Cord Tire Co., and in the United States, under license, by The B. F. Goodrich Co. With few exceptions all cord tires now in use are made from a modification of the well-known thread fabric used in making hose pipe bicycle tires.

Several rubber factories have installed refrigerating equipment for keeping the rolls of calenders and mixers cool. (p. 534)

The Eagle White Lead Co. and the Picher Lead Co. have united and the new company is the Eagle-Picher Lead Co. (p. 556)

The elasticity of rubber is utilized in forming sheet metal objects in a die press. The rubber cushion must be of a quality which will stand considerable distortion without breaking. (p. 566)

LATIN AMERICA

ARGENTINA

A press report from Buenos Aires indicates that the Government, in a voluntary move to eliminate restrictions on trade with the United States because of forthcoming discussions relative to a commercial treaty between the two nations, has abolished, effective July 1, the Exchange Control Office as well as the system of so-called "previous permits" under which nothing could be imported unless permission first was obtained. On the basis of 1940 statistics, about 85% of imports into Argentina will now be allowed to enter the country without restrictions. In this group are mostly raw materials including rubber. About 11% of the imports, those termed "non-essential" articles, are subject to quantitative restrictions on a quota basis; while the balance, the luxuries, will be prohibited "as a temporary measure until the exchange situation improves."

BRAZIL

In connection with the article "The Brazilian Rubber Industry" which appeared on page 35 of the April issue of INDIA RUBBER WORLD, C. E. Nabuco de Araujo, Jr., author of that article, has since advised your editor that the Government of Brazil has started to improve labor conditions through the provision of financial support for the "seringueiros" or laborers, improvement of sanitary and medicinal facilities, and the enactment of protective labor legislation. Steps have been taken by the Ministry of Agriculture for facilitating the immigration of people from the Northeastern states of Brazil into the Amazon Valley. The Ministry is equally active in planning the installation of small farms and agricultural cooperatives and in the foundation of agricultural ranches in the most accessible places.

He quotes from an article in the book "Brazil," which states that labor is capable and relatively cheap (about $12 U.S. currency per month). He also states that "in this condition ample labor will be easily obtainable, especially if high compensation can be obtained by the laborers." After emphasizing the advantage of the depreciation of Brazilian currency in comparison with U.S. currency, he further states that the cost of rubber f.o.b. ocean boats as an average for 1940 was approximately 30¢ U.S. currency per kilo, or 13.60¢ per pound.

CUBA

We have been informed by Compañia Industrial Cubana de Gomas S. A., Matanzas, that, contrary to the report on page 65 of our May issue that the factory to be established at Matanzas is to be financed with funds raised by popular subscription, this company, the only one in that vicinity, has been financed by private enterprise. The firm, organized on September 23, 1940, started production last month on various rubber goods, including shoes, tires, and tubes, and will employ between 500 and 600 workers. David Schrage, former president of the Lithuanian Rubber Mfrs., Inkaras, A.B., Kuanas, Lithuania, and of the Gentleman Rubber Co., Lodz, Poland, is the company's head executive.

EUROPE

GREAT BRITAIN

Changes in Reclaiming Processes

The changes of recent years in compounding tire treads have forced the reclaiming industry to modify its methods. For the treads, purposely made tough and extremely resistant to aging and heat, do not yield a satisfactory reclaim by the usual alkali and heat treatment even when the final milling and refining to plasticize and homogenize it is considerably prolonged.

W. J. Essex[1] states that research has shown that increased plasticity in reclaims can be obtained if carefully controlled quantities of oxygen are applied after the alkali and before the mechanical treatment. In this process the dry, treated waste is disintegrated to suitable particle size and subjected to heat treatment in a closed vessel in the presence of moisture and oxygen. The degree of plasticity is accurately controlled by the temperature, duration of treatment and amount of oxygen used.

By this process, which forms the basis of British patent No. 453,702 (1936), alkali reclaim, otherwise difficult to plasticize and refine smoothly, can easily be massed together on a mill and, when strained, refines out smoothly into thin sheets, leaving only a small quantity of rough, unrefinable material.

Tests have shown that the oxygen treatment has no deleterious effects and that the product of the new process is equal in all respects to standard reclaim.

Certain rubber mixes containing large proportions of alkali tire reclaim do not extrude or calender so smoothly as desired unless heavily loaded. Furthermore some tire carcass mixes made with large amounts of such reclaim have a tendency to scorch when thiazole accelerators are used. This scorching has been found to be partly due to the alkali left in the reclaim. The problem, therefore, was to develop a neutral, non-scorching, whole tire reclaim which would calender and extrude smoothly and in all other respects equal standard alkali whole tire reclaim. Finally a process was evolved in which caustic alkalies were not used to destroy the cellulose, but a special chemical heated with the tire waste in a standard reclaiming vessel. The product, after washing and drying, was considerably tougher and more difficult to masticate than standard alkali reclaim at the dried stage, but plasticity was greatly increased after disintegration and treatment with oxygen and heat under pressure; while smooth, thin sheets, leaving very little unrefinable material were obtained from it.

This second type of reclaim was shown to be practically

[1] "New Developments in Rubber Reclaiming," *Trans. Inst. Rubber Ind.*, Feb., 1941, pp. 252-59.

neutral and to have considerably less tendency to scorch than alkali stocks.

Revised I.R.I. Diploma Scheme

As a result of efforts by F. D. Ascoli, a committee recently was formed to consider the diploma scheme of the Institution of the Rubber Industry with a view to suitable modification. The committee consisted of Dr. Pickles (chairman), Mr. Rogers, Dr. Schidrowitz and Dr. Twiss, who represented the I.R.I., and Mr. Saunsbury and Dr. West, representing Newton Heath Technical School and the Northern Polytechnic, respectively.

According to the revised diploma scheme, the associateship will in future be the basic educational qualification and will involve a three-year, full-time, post-school certificate course of study, or a corresponding part-time course. The licentiateship is primarily intended for part-time students, and the examination may be taken either as a final qualification or as a step toward the associateship. A licentiate may pass to the associateship only by attending approved courses and subsequently passing the associateship examinations.

Hitherto only students attending courses at the rubber schools of London, Manchester, and Glasgow could take the licentiateship examination. But the new regulations make the Diploma Scheme national in character, and students in almost any part of Britain will be able to train for this and the associateship examination. The courses are subdivided into (1) training in science at any technical school approved by the Institution, and (2) training in rubber science and rubber technology either at an approved rubber school or under the direct guidance of a Fellow of the I.R.I.

There is no examination for the fellowship, which will be awarded for proved high ability within the rubber industry.

Notes

Recently the Minister of Supply announced that Sir Walrond Sinclair, chairman and managing director of the British Tire & Rubber Co., director of various other concerns, and president of the Institution of the Rubber Industry and of the India Rubber Manufacturers' Association, had been appointed Rubber Controller. The appointment came as a complete surprise to the Rubber Exchange, which was closed for some hours on the day the announcement was published.

The Rubber Growers' Association reports that A. C. Mathews has been elected chairman for the ensuing year, and G. C. Denham, vice chairman.

GERMANY

Berlin Section of German Rubber Society Meets

The Berlin Section of the Deutsche Kautschuk Gesellschaft met March 9 and discussed various questions of general practical interest. Methods of using Renacit, a recent product of I. G. Farbenindustrie to aid in plasticizing Perbunan and in reclaiming Buna S and Perbunan, came first. In milling operations, it is advised to use Renacit in combination with a softener, for instance Plastikator RA, in which up to 40 parts of Renacit can be dissolved. It is noted that while the addition of Renacit to Buna S offers no advantages in the process of degradation if this is carried out in a degradation kettle, yet when the operation takes place in a kneading machine, the incorporation of 2% of Renacit is very useful. The material can also be advantageously employed when various degraded batches are to be homogenized on the rolls or in the kneading machine. A drawback in the use of Renacit is that it has a tendency to cause skin irritations; consequently I. G. Farbenindustrie will soon market a less irritating product, Renacit II, which consists of a substance related to Renacit I combined with paraffine.

In reply to an inquiry, the I. G. Farbenindustrie stated that the concern has worked hard on the problem of producing a non-fading buna and a tasteless and odorless buna, and has reason to expect that the efforts will be successful.

Another subject taken up at the meeting was the effect of various degrees of degradation on the extrusion qualities of Buna S and Buna SS. Samples showed that for smooth extrusions with sharp edges, the most advanced stage of plasticity was required; whereas well-shaped tubing was best made from buna that had undergone little or no thermal plasticizing, provided the right compound and method of working were used.

Another topic was the cold resistance, which it seems is measured in the I. G. laboratory by means of the E modulus or elasticity constant. The cold resistance of degraded buna was said to be somewhat lower than that of ordinary buna. The materials, Plastikator 77 and dibenzyl ether, have been found especially suitable for cold-resisting compounds.

At the end of the meeting Dr. Hans Schmidt, acting head of the Berlin District Section since the outbreak of the war, resigned for professional reasons.

Synthetics for Dipped Goods

The use of buna for various products formerly made of natural rubber has increased greatly in Germany, and it is successfully taking its place in the manufacture of dipped goods also, says a recent issue of *Gummi-Zeitung*. Gloves are the chief products made by dipping, and very few types of these goods now contain any natural rubber. Gloves for protection against gas and for various industrial purposes resistant to oils, benzine, weak and highly concentrated acids, are now made seamless from German materials, and they are claimed to be far superior to those made of natural rubber; in fact for some purposes where buna is used, natural rubber cannot be employed at all. Gloves for use by women in home and industry are now made of the synthetic materials exclusively and are said to be sufficiently thin, elastic, and durable.

All kinds of nipples for feeding bottles are also made almost entirely of buna. It has not yet been possible to achieve the transparency that had become usual in natural rubber goods of this type, but this is not considered necessary.

Surgeon's gloves and finger stalls and similar delicate goods which must combine strength and a high degree of elasticity with thinness are still for the most part made of natural rubber, but successful attempts have already been made to incorporate a fair proportion of buna in mixes for these goods.

Balloons for children and for advertising purposes are not being made at present, but it is expected that the formerly large German market for these goods will return when peace comes and offer another outlet for German synthetics.

Dipped goods are made chiefly of Buna S, Buna SS, and Perbunan, the latter serving for the best qualities as it is more elastic and at the same time resistant to oils and solvents.

The manufacturing process, while similar to that followed when natural rubber solutions are used, offered various difficulties which had to be overcome. The bunas are harder and more nervy than plantation rubber, and many a factory trying to masticate them with existing older-type machinery had unpleasant experiences and in many cases were forced to obtain new and up-to-date mills. Difficulties were also encountered in preparing buna solutions, and expensive new mixers had to be installed before solutions could be successfully made. With the newest types of mixers it is possible to complete the production of buna solutions in about four hours. The appropriate solvent for the different types of buna must be carefully selected. For Perbunan mixes toluol, although more expensive than benzol, is preferred. However, with efficient apparatus, about 80% of the solvent can be recovered.

Another source of trouble was the right concentration and viscosity of buna solutions. But once the solutions have been properly prepared, the actual dipping process is simpler than with natural rubber solutions. For one thing it is much easier to obtain a buna solution free of bubbles; one hour after stirring, the latter is usually perfectly free from bubbles, and the dipping process can be interrupted at will to add fresh

solution. In addition the dipping and drying operations can be effected more rapidly so that a larger number of dippings can be carried out in a shift than when natural rubber is used. However, buna solutions are generally less concentrated, thus requiring more dippings to obtain the same thickness in the finished goods.

When the goods are finished and have to be rolled, the lower adhesive power of buna also causes trouble.

No changes had to be introduced in the vulcanization process, which, if anything, is simpler than with natural rubber, because the vulcanization plateau of buna is wider and a slight deviation from the heating limits in either direction is not nearly so unfavorable in its effect on the vulcanizate. However the development of vulcanization fumes at higher temperatures is much more marked and more disagreeable so that when curing dipped buna goods, greater care must be exercized in removing the fumes.

The cured goods are removed from the molds in the usual manner, but here again the special structure of buna makes itself felt, and the removal especially of certain types of nipples is more difficult.

FAR EAST

NETHERLAND INDIA

Search for Suitable Coagulants

The difficulty under present conditions of obtaining formic acid for coagulation has led research institutes in the Far East to experiment with a view to finding other suitable coagulants. Working on this problem at the Rubber Research Division of the West Java Experiment Station, G. E. van Gils made the surprising discovery that various substances usually employed for stabilizing latex can also produce coagulation. He compares latex to an oil-in-water emulsion that can be made more stable by the addition of such typically oil-in-water emulsifiers as casein, soap, and various sulphonated conductors including Igepon, Vulatmol, Mekal, Vulkastab, and Sulphonated Lorol, and showed that under certain conditions some of these can also coagulate latex. Among the conductors that produce coagulation are certain sulphonated mineral oils (as textile finishing oil), sulphonated vegetable oils (so-called Turkey-red oil) and sulphonated oleic acid; even ordinary coconut oil can act as a coagulant for latex of a certain degree of concentration. Sulphonated oils give darker colored sheet than is obtained with formic acid, but the intrinsic properties of the sheet appear unaffected.

Further research is, of course, required before these materials can be recommended for use on a large scale, and Mr. van Gils seems to feel that sulphonated mineral oils, which are cheap and easily obtained in Netherland India, are the most promising.

Crude Rubber Exports

Exceptionally heavy shipments by natives from the Outer Provinces caused crude rubber exports from Netherland India to reach the unusually high figure of 58,971 tons in January, 1941. While estate rubber amounted to 21,015 tons in that month, native rubber came to 37,956 tons. The latter figure compares with only 9,321 tons sent in December, 1940.

February exports totaled 42,098 metric tons. Of the February shipments, the United States took 25,521 tons, Japan, 3,089 tons, United Kingdom, 1,629 tons, and other countries 11,859 tons.

INDO-CHINA

The storage and sales of all rubber produced in Indo-China for export is to be centralized and controlled by the Government, which has established a Rubber Sales Bureau that alone will be authorized to receive, store, and sell all rubber produced in Indo-China for export, and to which planters will have to turn over their entire output. The Bureau will pay for the rubber semi-annually at prices fixed every six months on the basis of the average prices quoted in the preceding period. However advances may be granted planters in accordance with existing contracts. A commission, the amount of which will be fixed by the Government, will be charged by the Bureau to cover office expenses, but the Bureau is strictly forbidden to make any profit on its transactions. Any balance from the commissions remaining at the end of the year will be remitted in their entirety to the Rubber Research Institute.

The Bureau, with offices in Saigon, will be managed by a board of five directors appointed by the Governor-General. The Government will be represented by the Chief of the Government Rubber Offices who will control all transactions of the Bureau. Planters whose output exceed 1,200 metric tons in the preceding year will deliver their rubber directly to this Bureau, all other planters will deal with the Bureau through authorized dealers.

CEYLON

Net exports of crude rubber from Ceylon in 1940 increased to 88,937 tons from 61,028 tons in 1939. The export quota for the year was 90,031 tons. Because of the difficulties caused by abnormal weather conditions and labor troubles, the results are considered very good.

The Rubber Research Scheme intends to extend its work on rubber selection and breeding, and the board at a recent meeting decided to request the Government to lease to it an area of about one square mile of Crown land. It is expected that the new work will cost around 300,000 rupees spread over a period of 12 years. At the meeting it was also decided to give fullest support to proposals encouraging the development of cooperative societies for small rubber holders.

Another subject discussed was the use by small-holders of acetic and formic acid adulterated with sulphuric acid, and proprietary coagulants of which sulphuric acid is the base. It was decided to follow Malaya's example and recommend the prohibition by government of the importation of sulphuric and other mineral acids except under license; also that steps should be taken to bring stocks of acetic and formic acids under control now while supplies were plentiful so as to permit price or other restrictions to be imposed without delay if and when a shortage occurred.

MALAYA

During 1940 shipments of crude rubber from Malaya totaled 772,767 long tons, against 553,324 long tons in 1939. Net Malayan exports were 538,448 long tons, against 375,473 long tons in 1939. The gross exports from Malaya in 1940 included 22,245 tons of latex and 2,758 tons of crepe sole rubber. In addition 2,836 tons of gutta percha and 6,330 tons of jelutong left Malayan ports in 1940.

As a result of the increase in permissible exports during the year, the area out of tapping dropped from 322,526 acres the beginning of 1940 to 177,756 acres by December. At the same time the tapped area rose from 1,534,962 to 1,632,136 acres; while output amounted to 549,399 tons.

Accelerator 2-MT

Accelerator 2-MT, recently announced by E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., is an all-purpose accelerator, particularly recommended for stocks used in dynamic services where the vulcanizate is exposed to severe mechanical working such as tire carcass and tread stocks, belt frictions and covers, and vibration dampers. A white odorless powder with a melting point of 104-105° C., 2-MT is chemically 2-mercapto-thiazoline and has the following structural formula:

Although closely related chemically to mercapto-benzothiazole, 2-MT is less acidic and can be activated with strong basic aldehyde-amines such as Accelerators 808 and 833.

Stocks accelerated with 2-MT cure rapidly at 259° F. and according to claims, have high moduli, tensile strength, and tear resistance, and are resistant to aging at both normal and elevated temperatures. Such stocks, with a broad range of cure, are reported to be unimpaired physically when cured far beyond the optimum. When activated with strong aldehyde-amines, 2-MT stocks are said to be characterized by processing safety, low hysteresis (low heat build-up), resistance to aging, and freedom from brittleness at high temperatures. It is further claimed that outstanding resistance to aging is imparted by 2-MT plus Accelerator 808 to stocks containing reclaim and that such acceleration permits a higher ratio of reclaim to crude rubber.

Imports by Customs Districts

	April, 1941		April, 1940	
	*Crude Rubber		*Crude Rubber	
	Pounds	Value	Pounds	Value
Massachusetts	13,335,175	$2,396,904	15,105,058	$2,693,467
Buffalo	.....	.....	100,620	17,231
New York	74,132,653	13,085,849	104,382,463	18,394,989
Philadelphia	1,116,837	191,913	1,952,120	330,731
Maryland	8,425,264	1,472,327	14,188,408	2,415,976
Mobile	1,465,270	247,397	346,175	58,938
New Orleans	3,763,381	742,519	7,911,332	1,391,670
Galveston	147,500	24,961	112,000	20,767
El Paso	.....	.....	123,200	10,670
Laredo	116,200	10,879	.....	.....
Los Angeles	33,809,998	5,893,647	9,640,534	1,709,957
San Francisco	247,771	44,441	819,548	145,360
Michigan	2,240	425	.....	.....
Ohio	4,233,085	652,603	2,856,565	516,379
Tennessee	.....	.....	268,775	48,527
Colorado	1,008,000	173,907	560,000	95,249
Totals	141,803,374	$24,937,772	158,366,798	$27,849,911

*Crude rubber including latex dry rubber content.

Editor's Book Table

BOOK REVIEWS

"Commodity Year Book, 1941." Prepared and published by Commodity Research Bureau, Inc., 82 Beaver St., New York, N. Y. Cloth, 8½ by 10⅞ inches, 636 pages. Price $7.50.

This, the third annual volume of a series, contains, in separate sections, discussions of the marketing of 75 different basic commodities including rubber, followed by charts and statistical data on each material. The presentation of marketing discussions in this volume is in line with the purpose of presenting a different phase of commodities in each edition. It will be recalled that in the 1940 edition the discussions were centered on processing methods for converting raw materials to finished form. The section on rubber this year briefly covers: preparation for shipment; baling; transportation; international control; the Rubber Reserve Co.; reclaimed rubber; and synthetic rubber.

In addition to the separate commodity sections the volume includes three feature articles: "War Time Control of Commodities"; "Economic Functions of Commodity Exchanges"; and "War and Commodity Prices."

"Mechanical Vibrations." Second Edition. J. P. Den Hartog. Published by McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York, N. Y. 1940. Cloth, 6 by 9 inches, 448 pages. Indexed. Price $5.

Although primarily a textbook, this volume has also been written to meet the needs of the practicing engineer. Thus, in addition to covering the theoretical aspects of vibrational phenomena, the book emphasizes the application of principles and calculations to the solution of practical problems in vibration, enabling a rational approach in the design of vibration isolators.

"Plastics in Industry," by "Plastes." Published by Chemical Publishing Co., Inc., 236 King St., Brooklyn, N. Y. 1941. Cloth, 5½ by 8½ inches, 241 pages. Indexed. Price $5.

This book has been written for the industrialist that he may obtain a clear picture of plastics as a comparatively new group of raw materials, worthy of consideration for the fabrication and construction of a wide variety of products. Despite the enthusiasm of the authors, they offer a word of warning—that the plastics industry does not offer a panacea for all ills or a material of construction for all purposes.

The emphasis is placed on application, and chapters deal with use in the chemical and allied industries, the electrical industry, aircraft construction, automobile manufacture, the textile industry, the building industry, furniture manufacture, and in packaging and display. Use in the field of engineering, where plastics have faced strong competition with metals, is particularly stressed. Something is also said of molding, fabrication, design, specifications, and the properties of the various plastics.

There is a brief chapter on synthetic rubber where the authors designate all of these materials as "synthetic rubber-like plastics." Mention is also made of synthetic rubber in the various chapters on application.

"Strategy in Selling." J. C. Aspley. Published by The Dartnell Corp., 4660 Ravenswood Ave., Chicago, Ill. 1940. Cloth, 4½ by 8½ inches. Price $6.

"Strategy in Selling" comprises seven pocket-size manuals, all packed in a single carton, and is based on the premise that a new philosophy toward selling has been evolved in recent years, a philosophy that regards salesmanship primarily as a service to the buyer and not just a device for getting orders. Theories of selling are purposely omitted, but the actual methods employed by hundreds of successful salesmen are set forth in straightforward fashion. The titles of the individual volumes and number of pages of each follow: "Planning the Sale", 72 pages; "Getting Better Interviews", 60 pages; "Making the Presentation", 60 pages; "Disposing of Objections", 64 pages; "Closing the Sale", 70 pages; "Managing Your Time", 62 pages; and "The Way to Leadership", 64 pages.

"Wage and Hour Manual. 1941 Edition." Published by The Bureau of National Affairs, Inc., 2201 M St., N. W., Washington, D. C. Cloth, 6 by 9 inches, 1120 pages. Price $5.

This volume, containing about 500 pages more than the 1940 edition, embraces all documentary material on government regulation of wages and hours—the laws, administrative regulations and interpretations, and decisions of the courts. Supplementing the basic material are non-technical explanations, questions and answers on specific cases, charts illustrating the scope of exemptions, sample payroll forms, and other devices designed to translate the law into terms understandable by the lay employer.

"The Federal Labor Laws." Russell L. Greenman and Leslie E. Sanders. Published by The National Foremen's Institute, Inc., Deep River, Conn. 1941. Cloth, 5¼ by 8 inches, 40 pages. Price $1.50.

Supervisors, department heads, and foremen will find in this manual all they need to know about these three labor laws: the Wagner Act, the Walsh-Healey Act, and the Wages and Hours Act. The book, written in simple language, is limited chiefly to those portions of the law that affect department heads and their relations with the workers under them.

NEW PUBLICATIONS

"P-Q. Your Key to Increased Production." Sun Oil Co., Philadelphia, Pa. To maintain a maximum "P-Q" or production quota, according to this folder, three factors—labor, equipment, and petroleum products—must function at their best. The third factor, the use of the right petroleum product in the right place, is held to be of vital importance today when American industry is making every effort to increase production. The folder calls attention to the wide range of Sun products at industry's command and illustrates how these products have met the problem of a higher "P-Q" in several instances.

"Heresite Finishes and Plastics." Heresite & Chemical Co., Manitowoc, Wis. 20 pages. Heresite industrial finishes, colored enamels, and transparent molding compounds, described in this booklet, are phenol-formaldehyde reaction products, especially designed to resist corrosion. Standard industrial coatings and decorative enamels require baking; while an air dry finish, which is particularly suited as an alkali resistant coating, needs no heat treatment. The resistance of the air dry material to ammonia may be of interest in connection with the protection of latex processing equipment. Another series of finishes, W-307, is said to be suitable for application on hard rubber products.

"Maps of Selected Industries Reported at the Census of Manufactures, 1937." United States Department of Commerce, Bureau of the Census, Washington, D. C. For sale by the Superintendent of Documents, Washington, $1. 126 pages. This folio based on the 1937 census, contains three maps for each of the 39 industries included, showing the number of establishments, approximate number of industrial wage earners in the particular industry by counties, and approximate size of the industry in each county in terms of value added by manufacture. Three maps relate to rubber goods (other than tires and tubes, boots and shoes) and three to the rubber tires and inner tubes industries. No maps are shown for the rubber boots and shoes industry.

"Chemical Facts & Figures—Annual Statistics of The American Chemical Industry." First edition, 1940. Manufacturing Chemists' Association of the United States, 608 Woodward Building, Washington, D. C. Price 65¢ postpaid (75¢ west of Mississippi). 220 pages. This compilation of chemical statistical data includes factual data, graphs, and statistics on chemical production, sales, imports, exports, employment, payrolls, safety, research, and finance. Certain statistics on allied or related industries are included because of the importance of chemical processes utilized by such industries.

"Priorities and Defense." Division of Priorities. Office of Production Management. Washington, D. C. 69 pages. A clear explanation of what priorities are and how the system works is presented in this booklet which also contains the priorities critical list as revised to March 15, 1941, War and Navy department instructions on priorities, copies of preference rating certificates and forms, and other information pertinent to the subject. It is emphasized that one of the most important factors in the whole system is the matter of proper scheduling of production for defense. Thus the armed services can issue preference rating certificates on the more than 200 items on the critical list to insure priority of production according to the assigned rating. Certain items of which there is a serious shortage have been subjected to industry-wide control and allocation by the Priorities Division. Neoprene, aluminum, magnesium, and machine tools are examples of the latter class.

"Clark Pictorial." Vol. 2, No. 6. Clark Tructractor Division of Clark Equipment Co., Battle Creek, Mich. 16 pages. This group of pictures accentuates the problem of speed-up for defense and shows how the job of material handling can be expedited by the use of the firm's industrial trucks. Supplementary photos show New York subway cars, built by the firm and utilizing 56 applications of Goodrich rubber.

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Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	COMMODITY	CITY AND COUNTRY
660	Household sponges	Montreal, Canada
664	Sponge rubber-lined felt carpeting	Vancouver, Canada
672	Hard rubber combs	Bangkok, Thailand
678	Used tires	Vancouver, Canada
682	Hard rubber combs, nursing nipples, prophylactics, toy balloons	Cairo, Egypt

Rubber Trade Inquiries

The inquiries below are of interest not only in showing the needs of the trade, but because additional information may be furnished by readers. The Editor is glad to have those interested communicate with him.

No.	INQUIRY
2841	Manufacturers of gages for measuring the thickness of calendered and milled stocks.
2842	Manufacturers of inflated toys for babies.
2843	Suppliers of camelback.
2844	Suppliers of equipment for dipping rubber gloves.
2845	Manufacturers of rubber band tubing.
2846	Manufacturers of rubber bands.
2847	Manufacturers of latex spraying equipment.
2848	Manufacturers of lathe-cut rubber gaskets.

Patents and Trade Marks

APPLICATION

United States

2,238,550. **Waterproof Mattress**. S. Blake, Brookline, and E. Woll, Dorchester, assignors to New York Mattress Co., Boston, all in Mass.

2,238,589. **Neon Tube Connector** with Elastic Gaskets. F. J. Hensler, Concord, N. Y.

2,238,666. **Textile Plants Defibration Apparatus** Using Rubber Rolls. L. S. Unzueta, Bilbao, Spain.

2,238,683. **Highway Marking Guard**. H. F. Elliott, assignor to Louis S. Wertz, Inc., both of Cleveland, O.

2,238,722. **Bottle Stopper**. F. E. Fender, Evanston, assignor to Vaughan Novelty Mfg. Co., Chicago, both in Ill.

2,238,827. **Venting Means** for Nursing Nipples. C. J. Schmid, assignor to Julius Schmid, Inc., both of New York, N. Y.

2,238,828. **Vented Nipple**. C. J. Schmid, assignor to Julius Schmid, Inc., both of New York, N. Y.

2,238,850. **Mildewproofing and Mothproofing Treatment** (a Rubberized Cellulose Fabric Impregnated with a Fatty Acid Soap of Cadmium). M. Leatherman, Hyattsville, Md.

2,238,878. **Bandage**. A. and S. Baitz, both of Royal Park, Victoria, Australia.

2,238,888. **Dispensing Closure Member**. B. Kluth, Berlin, Germany.

2,238,964. **Respirator**. N. K. Benos, Salt Lake City, Utah.

2,239,054. **Hair Rinse and Dye Applicator**. M. Rock, Denver, Colo.

2,239,056. **Strapless Brassiere**. M. Schiffer, New York, N. Y.

2,239,070. **Non-Skid Tire** with Circumferential Ribs, the Space between the Ribs Containing Segments of Soft Elastic Rubber. O. C. Work, Nutley, N. J., and M. C. Overman, assignors, by mesne assignments, to United States Rubber Co., both of New York, N. Y.

2,239,077. **Resilient Car Wheel** with Annular Resilient Member. C. Burton and D. P. Steward, both of Johnstown, Pa.

2,239,109. **Refrigerator Car Construction**. J. S. Lundvall, assignor to Union Asbestos & Rubber Co., both of Chicago, Ill.

2,239,113. **Cushioning Device** Comprising a Plurality of Ball-Like Elements, and Resilient Confining Means Supporting Them in a Column. A. F. O'Connor, assignor to Union Asbestos & Rubber Co., both of Chicago, Ill.

2,239,159. **Line Wiping Service**. D. G. Miller, assignor to Patterson-Ballagh Corp., both of Los Angeles, Calif.

2,239,217. **Foundation Garment**. C. Bullinger, Riverside, assignor to A. Stein & Co., Chicago, both in Ill.

2,239,245. **Leather Substitute** Comprising a Foundation of Coextensive Layers of Heavy Woven Fibrous Material United by Latex, a Facing of Flock Adhesively Secured to One Side of the Foundation and a Layer of Latex-Impregnated Paper Adhesively Secured to the Other Side of the Foundation to Add Rigidity. L. E. Oliner, New York, N. Y.

2,239,249. **Bottle Closure and Pouring Spout**. G. W. Robinson, Torrance, Calif.

2,239,265. **Shoe Heel and Sole**. J. de Noronha, New York, N. Y., assignor to De Noronha Rubber Products Corp., New Brunswick, N. J.

2,239,269. **Refrigerator Car Hatch Closure** Including a Rubber Strip. J. S. Lundvall, assignor to Union Asbestos & Rubber Co., both of Chicago, Ill.

2,239,300. **Pneumatic Cushion**. J. E. O'Dell and C. D. Mason, both of Mishawaka, Ind., assignors to United States Rubber Co., New York, N. Y.

2,239,319. **Flexible Support** with Bonded Rubber Pads. F. B. Halford, Edgware, and C. F. Vickers, assignors to D. Napier & Son, Ltd., both of London, England.

2,239,422. **Curb Signal** of Soft Rubber for Automobiles. Y. Hayashi, Los Angeles, Calif.

2,239,574. **Brake Liner**. C. A. Schell, Lower Makefield Township, Pa., assignor to Thermoid Co., Trenton, N. J.

2,239,616. **Truss**. J. H. Mergehenn, Catonsville, and A. Mergehenn, Baltimore, both in Md.

2,239,754. **Windshield Wiper**. A. Marti, Hartford, Conn.

2,239,919. **Mitt** for Washing, Dusting, Polishing, with Rubber Band Wrist Attachment. E. C. Lindfelt, Des Moines, Iowa.

2,239,923. **Tank Ball** with Rubber Valve Member. H. S. May, Great Neck, assignor to American Rubber Products Corp., New York, both in N. Y.

2,239,946. **Protective Helmet**. T. B. Upchurch, Jr., Raeford, N. C.

2,239,988. **Electrolytic Device** with Perforated Rubber Member. J. B. Brennan and L. Marsh; said Marsh assignor to J. B. Brennan, all of Fort Wayne, Ind.

2,240,014. **Sound Deadener** Formed by Mixing a Non-Colloidal Water-in-Oil Emulsion of Uncured Rubber with a Heavy Aggregate (Particles That Will Pass 20- to 35-Mesh Screen). P. G. Peik, Detroit, Mich., assignor to Emulsions Process Corp., New York, N. Y.

2,240,056. **Eccentric Gear Pump** with Resilient Gear Member. M. Schmitz, Ferndale, Mich.

2,240,098. **Electric Outlet**. E. J. Morin, Chassell, Mich.

2,240,101. **Closure** for Test Tubes, Etc. F. Smith, Kelowna, B. C., Canada.

2,240,121. **Pump** with Cylinder Having a Flexible and Resilient Sleeve and Flange. G. A. Patterson, assignor to Red Jacket Mfg. Co., both of Davenport, Iowa.

2,240,150. **Suction Cleaner Motor Mounting**. A. W. Seyfried, Racine, Wis., assignor to Scovil Mfg. Co., Waterbury, Conn.

2,240,155. **Mop with Rubber Coupler**. J. P. Closson, Chicago, Ill., assignor, by mesne assignments, to A. S. Boyle Co.

2,240,169. **Inner Tube** with Twin-Tube Sections. B. H. Benson and B. E. Mendelsohn, both of Brookline, Mass.

2,240,240. **Mat** of Flexible Strip Material. O. Brockman, Louisville, Ky.

2,240,245. **Bag** for Preserving Foodstuffs, Formed of Unvulcanized Stretched Rubber Capable of Shrinking When Heated. H. M. J. Tyrel de Poix, Rueil, France, assignor to Dewey & Almy Chemical Co., Cambridge, Mass.

2,240,269. **Rubber-Lined Pulverizing Mills**. W. I. Sallee, Cleveland, O.; E. R. Sallee, administratrix of W. I. Sallee, deceased.

2,340,285. **Resilient Steering Column Bushing**. J. D. Chamberlin, Detroit, Mich.

2,240,308. **Orthopedic Belt** for the Treatment of Gastric Ptoses. R. H. Mahe, Le Havre, France.

2,240,314. **Closure** for Battery Box Covers. R. Reppert, Pelham Manor, and R. A. Johnson, Brooklyn, assignors to American Hard Rubber Co., New York, all in N. Y.

2,240,329. **Dropper** Combined with Cap for Phials, Etc. R. J. Fialip, Paris, assignor to L. Picard, Frileuse par Briis-Sous-Forges, both in France.

2,240,336. **Dental X-Ray Film Holder** Free from Secondary Radiation and Composed of Rubber, 95%, Sulphur, 2½%, and Reaction Product of Formaldehyde and an Aliphatic Amine, 2½%. R. L. Kreider, Erie, Pa.

2,240,369. **Windshield Wiper**. E. C. Horton, Hamburg, assignor to Trico Products Corp., Buffalo, both in N. Y.

2,240,537. **Composition Header and Tube Plate** (Synthetic Rubber) for Radiators. F. M. Young, Racine, Wis.

2,240,542. **Tire and Tread Design**. P. M. Bourdon, Paris, assignor to Michelin & Cie, Clermont-Ferrand, both in France.

2,240,547. **Shaving Brush**. B. Buddish, assignor to Rubberset Co., both of Newark, N. J.

2,240,582. **Polymer Composition** Comprising a Gummy-to-Tough Rubber-Like Iso-Olefin Polymer with Substantial Tensile Strength, but Normally Subject to Deterioration by the Action of Actinic Light, and a Minor Proportion of an Unmodified Oil-Soluble Phenolic-Aldehyde Resin. W. J. Sparks, Cranford, N. J., assignor to Standard Oil Development Co., a corporation of Del.

2,240,604. **Fluid Dispenser**. H. H. Berger, assignor to McCass Co., Los Angeles, Calif.

2,240,644. **Hydraulic Shock Absorber**. N. S. Focht, East Cleveland, O.

2,240,647. **Sanitary Bottle Lip**. R. L. Hartman and H. S. Lowe, both of Memphis, Tenn.

2,240,735. **Round Belt** Incorporating Torque Characteristics to Cause the Belt to Rotate during Operation. C. W. Yelm and A. F. Reznicek, assignors to Gates Rubber Co., all of Denver, Colo.

2,240,736. **Self-Turning Round Belt**, with Torque Action under Tension. C. W. Yelm and A. F. Reznicek, assignors to Gates Rubber Co., all of Denver, Colo.

2,240,745. **High Tension Electric Cable** Designed to Maintain the Insulating Compound under a Positive Pressure at All Times. R. W. Atkinson, Perth Amboy, N. J., assignor to General Cable Corp., New York, N. Y.

2,240,762. **Inking Apparatus** for Aniline Color Printing Machines with Rubber Roller. P. Dietrich, assignor to Maschinenfabrik Augsburg-Nurnberg A. G., both of Augsburg, Germany.

2,240,789. **Sheet Packing and Gasket** Comprising An Incompressible Base Sheet of Vulcanized Fiber and a Thin Coating of Compressible Sealing Material. R. L. Kreuz, Detroit, Mich., assignor to Wolverine Fabricating & Mfg. Co., Inc., a corporation of Mich.

2,240,816. **Pump-Type Shoe** with Elastic-Edged Opening. C. Tweedie, Jefferson City, Mo.

2,240,855. **Tire Construction** Which Involves Placing a Buffer Layer of Rubber Containing Activated Charcoal between a Light-Colored Rubber Sidewall Covering and the Sidewall Body of the Tire to Prevent Migratory Staining Material from Staining the Light-Colored Rubber. W. E. Phillips, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York.

2,240,856. **Tire Construction** Which Involves Placing a Buffer Layer of Thermoprene between a Light-Colored Rubber Sidewall Covering and the Sidewall Body of the Tire to Prevent Migratory Staining Material from Staining the Light-Colored Rubber. W. E. Phillips, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,240,866. **Tire Tread Design**. K. D. Smith, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,240,930. **Mounting for Panels**. L. G. Hunter, assignor to Hunter Sash Co., Inc., both of Flushing, N. Y.

2,241,026. **Motor Mounting**. E. L. Wylie, St. Louis, Mo.

2,241,098. **Road Rolling Machine** with Wobbling Tire Wheels. A. S. Miller, Fargo, N. Dak., and J. R. Ritchie, assignors, by direct and mesne assignments, to Wm. Bros. Boiler & Mfg. Co., both of Minneapolis, Minn.

2,241,125. **Molding Device** with Extensible Core. E. G. L. Girard, Paris, France.

2,241,138. **Resilient Support**. M. F. A. Julien, Paris, France.

2,241,139. **Aircraft Engine Unit Mounting**. M. F. A. Julien, Paris, and J. F. Paulsen, Viroflay, both in France.

2,241,227. **Tire and Tread** with Tall Traction Elements and a Tough Abrasive-Resisting Outer Tread Layer United to a Layer of Soft Rubber. E. F. Wait, Detroit, Mich., and J. E. Hale, assignors to Firestone Tire & Rubber Co., both of Akron, O.

2,241,267. **Hose Supporter**. T. E. Near and E. Sherlock, both of Detroit, Mich.

2,241,289. **Seamless Tubular Woven Fabric** with Rubber Strand Wefts. F. Blatter, assignor to F. Blatter and M. Aeschbach, co-partners in a joint-stock company, trading under name Jhco A.G. vormals J. Hollenweger & Co., all of Zofingen, Switzerland.

2,241,292. **Swimmer's Nostril Plugs**. A. A. Burke, Norfolk, Va.

2,241,298. **Wearing Apparel**. E. Friedman, Lawrence, N. Y.

2,241,309. **Ironing Board Bag** with Elastic Retaining Means. A. Kovalik, Homestead, Pa.

2,241,355. **Hose** with an Annular Body of Metal of Low Fusing Point within the Wall at an End of the Hose. A. D. Maclachlan, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,241,367. **Weed Guard** for Fishing Lines. A. O. Sarff, Walker, Minn.

Dominion of Canada

396,426. **Container Closure** with Rubber Packing Ring. T. W. Phillips, inventor, and Vacseal Containers, Ltd., assignee of one-half of the interest, both of London, England.

396,446. **Shoe Insole** with a Plurality of Intercommunicating Cells. J. and W. B. Trick, co-inventors, both of Vancouver, B. C.

396,455. **Alfalfa Pollinizing Machine** with Rubber and Canvas Covered Rollers. G. C. Dicks, Tuelon, Man.

396,536. **Fabric Decorating Machine** with a Strip Rubber Pressure Means. National Automotive Fibres, Inc., assignee of C. Davies, both of Detroit, Mich., U. S. A.

396,538. **Hand-Type Vibrator Cushion Pad**. John Oster Mfg. Co., assignee of J. Oster, both of Racine, Wis., U. S. A.

396,734. **Fluid Pressure Apparatus** with Rubber Seal. H. T. Lambert, St. Joseph, Mich.

396,848. **Tire Tread** with Narrow Flexible Insets Integrally Vulcanized in the Body of the Tread. United States Rubber Co., New York, N. Y., assignee of Fisk Rubber Corp., Chicopee, assignee of C. E. Maynard, Northampton, both in Mass., all in the U. S. A.

396,866. **Decalcomania Label and Sheet** for Rubber Articles, Comprising a Temporary Carrier Base and a Thin Transparent Rubber Film with a Printed Design on the Face not in Contact with the Carrier Base. International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of E. R. Burns, Cheshire, Conn., U. S. A.

396,872. **Anti-Vibrating Resilient Engine Support**. M. F. A. Julien, Paris, France.

United Kingdom

535,259. **Rubber Springs, Shock-Absorbers, Suspensions, Etc.** Soc. Italiana Pirelli.

535,260. **Clothing** Incorporating Elastic Fabrics or Bands. Narrow Fabric Co.

535,366. **Railroad Tie Plate Arrangements**. Resilient Products Corp.

535,382. **Windshield Wipers**. Trico Products Corp.

535,419. **Windscreen Wipers**. W. E. O'Shei.

535,924. **Storage Battery Paste-Retaining Envelopes**. International Latex Processes, Ltd.

Germany

703,691. **Rubber Plug** for Electric Wires. Siemens-Schurkertwerke A.G., Berlin-Siemensstadt.
704,098. **Rubber Suction Ring for Containers.** K. Muller, Frankfurt a.M.
704,282. **Elastic Hose** for Varicose Veins, Etc. Hermann Haakh, Bad Soden, Taunus.
704,905. **Rubber Bearings** for Steering Gear, especially of Motor Cycles. Bayerische Motoren Werke, A.G., Munich.

PROCESS

United States

2,241,384. **Sterilizable Adhesive Tape** Comprising Fabric with a Cellulose Composition Coating on One Side and a Pressure Sensitive Rubber Adhesive on the Other. A. W. Bateman and R. E. Thomas, both of Newburgh, N. Y., assignors to E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
2,241,385. **Making a Hollow Rubber Article,** Comprising Symmetrical Halves, by Deposition Directly from a Liquid Dispersion of Rubber. C. L. Beal, Cuyahoga Falls, assignor to American Anode, Inc., Akron, both in O.
2,241,440. **Footwear** with Upper Including an Elastically Stretchable Element Containing Rubber Threads. A. F. Bancroft, West Newton, assignor to Bancroft-Walker Co., Waltham, both in Mass.
2,241,599. **Shoes.** J. Hoza, Zlin, Czechoslovakia.
2,241,812. **Rubber Goods.** W. F. Gowdy, assignor to Archer Rubber Co., both of Milford, Mass.
2,241,856. **Continuously Manufacturing Rubber Thread,** Comprising the Steps of Continuously Forming the Thread by Extruding through a Spinning Nozzle Immersed in a Coagulating Bath a Coagulable Dispersion of Rubber; Continuously but Temporarily Advancing the Thread in the Form of a Traveling Helix Whereby an Opportunity Is Provided for Performing a Processing Operation over a Relatively Long Period of Time upon a Substantial Length of the Thread, but with the Thread Meanwhile Occupying Only a Comparatively Small Space. C. E. Herrstrom, Lakewood, and F. J. Samerdyke, Rocky River, assignors to Industrial Rayon Corp., Cleveland, all in O.
2,242,117. **Making Blasting Initiators** Involving Vulcanizing a Rubber Composition (in a Mold) in Juxtaposition with a Preformed Body of Thermoplastic Material without Substantial Intermingling of Rubber and Thermoplastic Material. M. H. English, Pompton Lakes, N. J., and R. R. Nydegger, assignors to E. I. du Pont de Nemours & Co., both of Wilmington, Del.
2,242,264. **Finishing Surfaces of Uncured Tires and Other Rubber Objects** Which Comprises Coating the External Surfaces with a Fluid Dispersion of Carbon Black, Permitting the Coating to Set, and Then Vulcanizing. G. L. Roberts, Charleston, W. Va.
2,242,455. **Making a Playing Ball** by Forming a Core, Winding a Layer of Thread about It, Dipping into a Viscous Latex to Form a Cover, Coating the Interior of a Heated Mold of Desired Size with the Latex, Placing the Ball into the Mold, and Applying Heat and Pressure. F. S. de Beer, Albany, N. Y.
2,244,550. **Making Porous Sheet Rubber Material** by Forming Perforations and Locally Heating Them to Soften and Preserve the Material. F. J. Chandler, Toledo, O.
2,244,557. **Tear Resisting Rubber Sheeting.** A. N. Iknayan, Indianapolis, Ind., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.
2,244,616. **Aerating Latex** by Whipping the Foam with a Plurality of Separate Beaters Progressively Submerged in the Foam Farther Than the Prior Beaters to Reduce the Size of the Foam. H. W. Greenup, Akron, and N. Johnston, Cuyahoga Falls, assignors to Firestone Tire & Rubber Co., Akron, all in O.
2,244,635. **Staticproof Hose.** F. B. Williamson, Jr., New Hope, Pa., assignor to Whitehead Bros. Rubber Co., Trenton, N. J.
2,244,648. **Self-Sealing Tire Inner Tubes.** F. G. Carnahan, Akron, O.

Dominion of Canada

396,593. **Hollow Rubber Balls** with Interior Ribs and Normal on the Exterior with Thin Rubber Strands over Which Is a Fabric Cover. F. T. Roberts, Malone, N. Y., U. S. A.
396,639. **Production of Game Balls** Which Comprises Forming at least the Outer Portion of a Non-Aqueous Mixture of Gutta Percha and a Polymer of a Vinyl Compound or a Substituted Vinyl Compound. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of D. F. Twiss, S. G. Ball, and J. F. Cookson, co-inventors, all of Birmingham, Warwickshire, England.
396,640. **Elecrically Conductive and Fire Resistant Rubber Article** with Two Surface Layers. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of D. Bulgin, Birmingham, Warwickshire, England.
396,718. **Laminated Elastic Fabric** Comprising a Lamina of Thread Fabric and a Lamina of Elastic Rubber Elastically Bonded to the Entire Adjacent Surface of the Thread Fabric. International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of T. G. Hawley, Jr., New Haven, Conn., U. S. A.
396,867. **Coating Fabrics** by Spreading a Heat-Sensitive Latex Composition on a Non-Adherent Traveling Surface, Heating the Latex to Thicken, Applying on to the Treated Latex a Fabric, and Spreading a Latex Composition on the Face of the Fabric Opposite That Which Is Adjacent the Traveling Surface, Passing the Plied Fabric through a Drying Medium, and Removing the Rubber Coated Fabric from the Traveling Surface. International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of H. F. Jordan, Nutley, N. J., U. S. A.
396,868. **Rubber Article Forming Method** Which Comprises Applying to a Base a Heat-Gelling Latex Composition Containing a Latex Coagulant and Forming a Gelled Deposit of Latex by the Application of Heat, and Associating the Formed Deposit with a Second Latex Composition Coagulable by the Coagulant in the Deposit. International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of S. R. Ogilby, Eltingville, Staten Island, N. Y., U. S. A.
396,869. **Coating Process** Which Comprises Applying to a Fabric a Latex Composition Having a pH below 7 and Containing a Condensation Product of a Straight Chain Aliphatic Alcohol Having at least Six Carbon Atoms with a Polyglycol Compound Containing at least Four Ethenoxy Groups, Said Composition Being Capable of Gelling at Elevated Temperature. International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of S. R. Ogilby, Eltingville, Staten Island, N. Y., U. S. A.

United Kingdom

535,327. **Purified Rubber Latex.** United States Rubber Co.
535,403. **Production of Goods of or Containing Rubber or Similar Material.** International Latex Processes, Ltd., D. F. Twiss, and P. H. Amphlett.
535,819. **Coating Surfaces with Rubber.** C. F. Lumb.
536,133. **Reenforced Rubber Structures.** E. I. du Pont de Nemours & Co., Inc.

Germany

705,207. **Inner Tubes.** Continental Gummi-Werke A.G., Hannover.
705,541. **Producing Fabric Hose** Containing Rubber Threads on a Circular Knitter. R. Wenzel, Oberlungwitz.

CHEMICAL

United States

2,241,770. **Stabilizing a Polymerizable Vinyl Compound** against Polymerization during Storage and Distillation by Treating with Phenylacetylene, and Thereafter Removing the Latter to Recover the Vinyl Compound in Readily Polymerizable Form. R. R. Dreisbach, S. M. Stoesser, and A. W. Hanson, assignors to Dow Chemical Co., all of Midland, Mich.
2,241,801. **Retarder of Vulcanization** (Vulcanizing Neoprene in the Presence of an Alkali Metal Silicate). R. V. Yohe, Cuyahoga Falls, and A. W. Browne, Akron, both in O., assignors to B. F. Goodrich Co., New York, N. Y.
2,242,037. **Cork Molding Products**—Prepared by Coating the Comminuted Body Material with a Protein Base Material, Then Intermixing with an Aqueous Dispersion of Rubber, and Separating the Aqueous Medium from the Mixture. M. Levin, Akron, O., assignor of four-tenths to J. T. Basseches, New York, N. Y.
2,242,208. **Vulcanizable Composition**—Comprising Rubber, a Diaryl Guanidine Activatable Accelerator, and the Non-Hygroscopic Resin-Like Amorphous Addition Product of Zinc Chloride and a Diaryl Guanidine. A. R. Davis, Old Greenwich, Conn., assignor to American Cyanamid Co., New York, N. Y.
2,243,171 and 2,243,172. **Accelerator**—Prepared by Reacting Two Molecular Proportions of a Cyclohexylamine Containing One Hydrogen Atom on the Amino Nitrogen Atom with One Molecular Proportion of an Aldehyde, and Further Reacting with Carbon Bisulphide. R. L. Sibley, Nitro, W. Va., assignor to Monsanto Chemical, St. Louis, Mo.
2,243,185. **Coating Composition** for Rubber Surfaces, Consisting Essentially of the Following Enumerated Solids: about 55 to 80% by Weight of Medium Ethoxy Ethyl Cellulose, 5 to 35% by Weight of an Alcohol-Soluble, Alcohol-Modified, Heat-Convertible Urea-Formaldehyde Condensation Products and 5 to 30% of a Soft Compatible Alkyd Resin. K. D. Bacon and T. A. Kauppi, assignors to Dow Chemical Co., all of Midland, Mich.
2,243,191. **Production of Unsaturated Compounds** by Splitting off Hydrogen Chloride from Chlorinated Hydrocarbons. A. Cantzler and H. Krekeler, both of Mannheim, Germany, assignors to Jasco, Inc., a corporation of La.
2,243,386. **Heat-Cured Composition** Resistant to Coal-Tar Solvents Including an Alkyd Resin and Polymerized Chloro-2-Butadiene-1,3. R. R. Lewis, Baldwin, and A. J. Weiss, Mineola, assignors to Vulcan Proofing Co., New York, all in N. Y.
2,243,470. **Production of High Molecular Weight Polymers** from Iso-Olefins and Halogenated Derivatives of the Polymers Which Comprises Polymerizing in the Presence of Carbon Tetrachloride with Boron Fluoride as Catalyst, at a Temperature below −10° C. A. J. Morway, Clark Township, and F. L. Miller, Roselle Park, both in N. J., assignors to Standard Oil Development Co., a corporation of Del.
2,243,560. **Insulation for Electrical Conductor** Which Comprises a Combination of Spun Glass and Polyvinyl Resin. R. W. Hall and H. A. Smith, both of Fort Wayne, Ind., assignors to General Electric Co.
2,243,658. **Low Temperature Active Polymerization Catalyst** for Iso-Olefins. R. M. Thomas, Union, and O. C. Slotterbeck, Elizabeth, both in N. J., assignors to Standard Oil Development Co., a corporation of Del.
2,244,020. **Liquid Dispersion** of Carbon Black and Vinyl Resins. C. W. Patton, Pittsburgh, Pa., assignor to Carbide & Carbon Chemicals Corp., a corporation of N. Y.
2,244,021. **Heat Stabilized Composition** of Isobutylene Polymer. R. Rosen, Elizabeth, and R. M. Thomas, Union, both in N. J., assignors to Standard Oil Development Co.
2,244,263. **Plasticizer** — Resinic Alcohol. W. Schrauth, Berlin-Dahlem, and S. Morgenstern, Berlin, both in Germany, assignors, by mesne assignments, to 'Patchem A.G. Zur Beteiligung An Patenten Und Sonstigen Erfindungsrechten Auf Chemische Verfahren," Zurich, Switzerland.
2,244,654. **Rubber Reclaiming** by Heating the Waste Rubber with an Aqueous Solution of Caustic Alkali and a Rubber Miscible Oil Derived from the Waste Products of Petroleum Refining and Capable of Co-Vulcanization with Rubber and Sulphur to Produce High-Quality Rubber Goods. F. Rostler and V. Mehner, both of Vienna, Germany.

Dominion of Canada

396,424. **Compounding a Rubber Mix** in Which the Ratio of Softeners to Pigments Is Such That the Addition of All the Softeners to the Pigments Causes the Latter to Form Lumps, by Forming a Paste of the Pigments, the Softeners, and a Rubber Non-Solvent (an Alcohol), Mixing This Paste with Powdered Rubber, and Removing the Rubber Non-Solvent. Wingfoot Corp., Wilmington, Del., assignee of H. G. Greer, Hudson, O.
396,437. **Emulsifying Agent** for Butadiene Polymerization which comprises X—CH_2—CH_2—Y—CH_2—CH_2—NZ. Where Y Is Oxygen or Sulphur, NZ, Is a Radical of a Secondary Amine or a Quaternary Ammonium Compound, and X Is a Radical of a Secondary Amine, and Acid Amide, an Ester, an Ether, a Quaternary Ammonium Compound, or a Hydroxyl Group. I. G. Farbenindustrie A.G., Frankfurt a.M., assignee of W. Parnwitz and B. Ritzenthaler, co-inventors, both of Ludwigshafen-on-Rhine, all in Germany.
396,572. **Moistureproofing Composition** Consisting Essentially of the Following Ingredients in Approximately the Following Proportions (by Weight) Dissolved in a Solvent: Vinyl Resin Resulting from the Conjoint Polymerization of a Vinyl Chloride and Vinyl Acetate, 15-15; Tricresyl Phosphate, 3-7; Paraffin (Wax), 1-3. Canadian Industries, Ltd., Montreal, P. Q., (subject to certain licenses to Carbide & Carbon Chemicals Corp., New York, N. Y.), assignee of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., assignee of W. H. Charch, Buffalo, N. Y., all in the U. S. A.
396,621. **Rubber Insulating Compound** Consisting Essentially of the Following Ingredients within the Stated Range of Proportions (Parts by Weight): Deproteinized Rubber, 29-34; Finely Divided Zinc Oxide, 23-28; Finely Divided Inert Filler, 37-44; Antioxidant, 0.5-2; Thiuram Polysulphide, 0.5-2; Having a Moisture Absorption Factor of not more Than 0.01 Gram/Sq. In. of Exposed Surface Area after Immersion for 7 Days in Distilled Water at 69 to 71° C. Canadian General Electric Co., Ltd., Toronto, Ont., assignee of E. W. Schwartz and E. T. Croasdale, co-inventors, both of Bridgeport, Conn., U. S. A.

United Kingdom

535,329. **Butadiene.** G. W. Johnson, (I. G. Farbenindustrie A.G.).
535,404. **Oil-Resistant Rubber Composition.** R. H. P. Watts, P. F. Schidrowitz, and Revertex Sales Co., Ltd.

535,417. **Compositions for Compounding Rubber.** N. S. Garbisch.
535,531. **Regeneration of Vulcanized Rubber.** Soc. Italiana Pirelli.
535,837. **Preparation of Softened Rubber.** British Rubber Producers' Research Assn., (V. H. Wentworth).
535,889. **Treatment of Rubber.** British Rubber Producers' Research Assn. and E. H. Farmer.
535,983. **Treating Rubber or Rubber-Containing Surfaces.** Dunlop Rubber Co., Ltd., D. F. Twiss, and F. A. Jones.

Germany

703,918. **Means of Protecting Sulphur Chloride Vulcanizates.** I. G. Farbenindustrie A.G., Frankfurt, a.M.
704,253. **Producing Sheets and the Like from Rubber Dispersions.** F. Miller, Milan, Italy. Represented by C. Deichler, Berlin.
705,363. **Reclaiming Rubber, also Such Containing Fabrics.** P. I. Alexander, Berlin-Charlottenburg.
705,399. **Producing Conversion Products by Isomerization of Rubber.** Chemische Werke Albert, Mainz-Kastel (Amoneburg).

MACHINERY

United States

2,241,382. **Skiving Machine.** H. E. Armstrong, Johnson City, N. Y., assignor to United Shoe Machinery Corp., Borough of Flemington, N. J.
2,241,178. **Skiving Machine.** J. F. Remington, Akron, O.
2,241,545. **Hydraulic Circuit Valve.** W. Ernst, Mt. Gilead, O., assignor to Hydraulic Press Corp., Inc., Wilmington, Del.
2,241,556. **Photoelectrically Controlled Hydraulic Press.** H. F. MacMillin, Mt. Gilead, O., and R. Thoreson, Birmingham, Mich., assignors to Hydraulic Development Corp., Inc., Wilmington, Del.
2,241,813. **Apparatus for Making Edge Beads on Sheet Rubber.** W. F. Gowdy, assignor to Archer Rubber Co., both of Milford, Mass.
2,241,893. **Apparatus to Shape Fastener Elements.** E. J. Tuttle, Waterbury, Conn., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.
2,242,209. **Hydraulic Press.** R. W. Dinzl, Westfield, N. J., assignor, by mesne assignments, to Baldwin Locomotive Works.
2,242,568. **Vulcanizing Unit.** A. E. Bronson, Shaker Heights, assignor to Dill Mfg. Co., Cleveland, both in O.
2,242,645. **Apparatus and Method** for Perforating Sheet Materials by Burning Holes in Sheet. R. B. Frost, Rutherford, N. J., assignor to United States Rubber Co., New York, N. Y.
2,242,732. **Apparatus for Rolling Beads or Rings** on the Mouths of Dipped Rubber Articles. R. H. Ulrich, Akron, O.
2,242,795. **Tire Vulcanizer.** L. E. Soderquist, assignor to McNeil Machine & Engineering Co., both of Akron, O.
2,243,461. **Tire Tread Surfacing Machine.** C. X. Haskins, assignor of one-half to I. G. Parsons, both of Spokane, Wash.
2,243,521. **Electroforming Method of Making Tire Molds.** J. W. Bishop, Detroit, Mich., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.
2,243,532. **Tire Vulcanizer** Adapted to Receive a Band Shaped Casing Shaped to Form in Press Closure. C. E. Maynard, Northampton, Mass., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.
2,243,707. **Tire Casing Buffer.** H. V. James, Denver, Colo.
2,244,420. **Control System** for Hydraulic Presses. R. W. Dinzl, Westfield, assignor to Watson-Stillman Co., Roselle, both in N. J.
2,244,591. **Apparatus for Testing Prophylactic Articles** of Thin Rubber. A. M. Youngs, Trenton, and J. S. Ballantine, Absecon, assignors to Youngs Rubber Corp., of N. J., Trenton, all in N. J.
2,244,592. **Printing Mechanism.** A. M. Youngs, assignor to Youngs Rubber Corp. of N. J., both of Trenton, N. J.

Dominion of Canada

396,511. **Apparatus to Remove Curing Bags** from Pneumatic Tires. Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of F. I. Honderich, Natchez, Miss., U. S. A.
396,671. **Rubber Sheet Pleating Device.** Panther Rubber Co., Ltd., Sherbrooke, P. Q., assignee of A. Greenbaum and E. A. Sheehan, co-inventors, both of Stoughton, Mass., U. S. A.
396,849. **Hydraulic Molding Press.** Watson-Stillman Co., Roselle, N. J., assignee of J. Lauterbach, Philadelphia, Pa.

United Kingdom

535,169. **Hydraulic Molding Press.** J. P. Spengler.
535,271. **Apparatus for Making Elastic Yarn.** United States Rubber Co.
535,306. **Hydraulic Molding Press.** Watson-Stillman Co.
535,311. **Extrusion Apparatus.** Particularly for Applying Sheathing to Electric Cables. J. Shaw & Sons (Salford), Ltd., and T. T. Clarke.
535,510. **Latex Foam Vulcanizer.** D. Bridge & Co., Ltd.
535,516. **Machines for Applying Washers, Rivets, Eyelets, Etc.** Leyland & Birmingham Rubber Co., Ltd., F. Heywood, J. Sumner, and J. I. Eccles.
535,868. **Vulcanizer for Rubber, Etc.** A. L. Wallace.
535,898. **Hydraulic Presses.** W. Ernst.
535,925. **Deposition Backings or Blankets** for the Production of Perforated Films or Sheets of Rubber or Similar Material. International Latex Processes, Ltd.

Germany

703,702. **Sectional Vulcanizing Mold.** Jenkins Bros., Bridgeport, Conn., U. S. A. Represented by G. Bueren, Berlin.
704,778. **Vulcanizer** for Endless Belts. Boston Woven Hose & Rubber Co., Cambridge, Mass., U. S. A. Represented by K. Lengner and H. Kosel, both of Berlin.
705,546. **Tool for Roughening Surfaces** in Rubber Manufacture. A. Medved, Duisburg-Hamborn.
705,793. **Device to Make Internal Repairs on Hose.** A. Ziegler, Giengen, Brenz.
706,072. **Device for Feeding Rubber Thread on Circular Knitters.** Schubert & Salzer Maschinenfabrik A.G., Chemnitz.

UNCLASSIFIED

United States

2,241,592. **Anti-Skid Chain Anchor Device.** S. Goldenberg, Grantwood, N. J.
2,241,638. **Protection of Aluminum.** P. D. Field, Quincy, Mass., assignor, by mesne assignments, to Wingfoot Corp., Akron, O.
2,241,757. **Railway Car Truck.** B. C. Baade, Dessau-Anhalt, Germany, assignor, by mesne assignments, to Wingfoot Corp., Akron, O.
2,241,839. **Rim Mounting.** A. W. Woodward, Kent, O., assignor to Wingfoot Corp., Wilmington, Del.
2,241,847. **Valve** for Multichambered Inner Tubes. B. C. Eberhard, Akron, O., and S. T. Williams, Bellerose, N. Y., assignors to Wingfoot Corp., Wilmington, Del.
2,241,850. **Pressure Bar** for Fountain Pens. W. J. Gillett and V. C. Sharp, assignors to W. A. Sheaffer Pen Co., all of Fort Madison, Iowa.
2,241,886. **Tire Tool.** G. T. Pearce, Akron, and H. J. Leidel, Wadsworth, assignors to Ken-Tool Mfg. Co., Akron, all in O.
2,242,207. **Air Distributing Head** for Tire Inflation Devices. J. F. Bowers, assignor to Aidco Automatic Inflator & Deflator Co., both of Georgetown, Del.
2,242,425. **Vehicle Wheel and Rim.** C. Ferro, West New Brighton, Staten Island, N. Y.
2,242,430. **Balancing Tires.** H. T. Kraft, assignor to General Tire & Rubber Co., both of Akron, O.
2,242,608. **Tire Scraper** for Cleaning Dual Tires. J. R. Graves, Sadorus, Ill.
2,242,980. **Apparatus to Measure Bowlers' Grips.** A. J. Nicholas, Philadelphia, Pa., assignor to Luzerne Rubber Co., Trenton, N. J.
2,243,385. **Hydraulic Remote Control Device.** R. L. Levy, Montrouge, France, assignor to Société D'Inventions Aéronautiques et Mecaniques S.I.A.M., Gribourg, Switzerland.
2,243,530. **Safety Valve** for Preventing Accidental Operation of Automatic Guns on Aircraft. G. E. Beharrell, Streetly, J. Wright, Birmingham, and H. Trevaskis, Sutton Coldfield, assignors to Dunlop Rubber Co., Ltd., London, all in England.
2,243,543. **Parasiticide.** W. P. ter Horst, Packanack Lake, N. J., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.
2,243,544. **Moth-Proofing Agent.** W. P. ter Horst, Packanack Lake, N. J., assignor to United States Rubber Co., New York, N. Y.
2,244,547. **Parasiticide.** W. P. ter Horst, Packanack Lake, N. J., assignor to United States Rubber Co., New York, N. Y.

United Kingdom

535,185. **Carbon Blacks.** W. Baird, W. J. S. Naunton, J. R. S. Waring, and Imperial Chemical Industries, Ltd.
535,450. **Detachable Non-Skid Devices** for Tires. Dunlop Rubber Co., Ltd., and R. F. Daw.
536,037. **Anti-Slip Attachment** for Resiliently Tired Wheels. C. M. Collins, and W. M. Henderson.
536,099. **Linoleum Floor Coverings.** Soc. Italiana Pirelli.

TRADE MARKS

United States

373,413. **Fash-N-Form.** Wearing apparel, haberdashery, including garters, suspenders, etc. National Shirt Shops of Delaware, Inc., New York, N. Y.
373,434. **Johnson & Johnson Custom Made.** Shoes. S. Weiner, New York, N. Y.
373,452. **Roll Control Bra by Pauline Gordon.** Girdles, etc. Pauline Gordon, Inc., New York, N. Y.
374,324. **Neva Cut.** Shoes. Jay Shoe Mfg. Co., Cambridge, Mass.
374,326. **Klip Tip.** Braces. Hickok Mfg. Co., Inc., Rochester, N. Y.
374,637. **Skid Check** V. Cleaning compound to remove oil, grease, and road film from rubber. Skid Check Corp. of America, St. Albans, Vt.
374,983. **Keel-Rub-R Dress Products.** Cleaning and preserving compound for rubber articles. Keel & Co., Inc., Philadelphia, Pa.
385,547. Representation of a square containing the word: **"Peer."** Rubber heels. Essex Rubber Co., Trenton, N. J.
385,569. **Delatex.** Rubber parts for milking machinery. De Laval Separator Co., New York, N. Y.
385,584. Representation of two concentric circles surrounding a rose and containing the words: **"C. G. Sargent's Sons Corp., Graniteville, Mass."** Textile machinery, including rubber driers. C. G. Sargeant's Sons Corp., Graniteville, Mass.
385,596. Representation of a pioneer scout below the words: **"Range-Master."** Shoes. Educator Shoe Corp. of America, New York, N. Y.
385,611. **Fashion Debs.** Shoes. Fashion Bootery, Seattle, Wash.
385,621. Representation of a tire track and the words: **"Trak O Grip."** Tires. Dunlop Tire & Rubber Corp., Buffalo, N. Y.
385,626. Representation of a bird between the words: **"Rhythm Step Casual (The 1...2...3 Shoe)."** Shoes. Johnson, Stephen & Shinkle Shoe Co., St. Louis, Mo.
385,627. Representation of a bird between the words: **"Rhythm Step Shopper (The 1...2...3 Shoe)."** Shoes. Johnson, Stephen & Shinkle Shoe Co., St. Louis, Mo.
385,653. **Feather-Fome.** Plastic shoe filler. General Tire & Rubber Co., Akron, O.
385,654. **Terrace Fashion.** Shoes. Samuels Shoe Co., St. Louis, Mo.
385,657. **Airfoam.** Sponge rubber. Goodyear Tire & Rubber Co., Akron, O.
385,699. **Concerto.** Foundation garments. Maiden Form Brassiere Co., Inc., New York, N. Y.
385,703. Representation of a shaded label containing the words: **"Arc Diaphragm."** Vaginal diaphragms. Federal Physician's Supply Co., Denver, Colo.
385,716. **Crofton.** Clothing, shoes, etc. Gimbel Bros., Inc., New York, N. Y.
385,769. **Lillian Russell.** Clothing. L. Russell, Kew Gardens, Long Island, N. Y.
385,879. **Loxal.** Covered rubber thread. United Elastic Corp., Easthampton, Mass.
385,888. **Elite.** Tires and tubes. Gamble Stores, Inc., Minneapolis, Minn.
385,895. **Carnegie.** Tires and tubes. Broadway Tire Co., New York, N. Y.
385,898. **Wilson.** Tires and tubes. Broadway Tire Co., New York, N. Y.
385,911. **American Beauty.** Radiator flush. General Tire & Rubber Co., Akron, O.
385,969. Representation of an American eagle. Combs. S & G Rubber Co., Inc., New York, N. Y.
385,970. Representation of a bird and the word: **"Eagle."** Combs. S & G Rubber Co., Inc., New York, N. Y.
385,978. **Kumfit.** Aprons. Rand Rubber Co., Inc., Brooklyn, N. Y.
386,011. Representation of two concentric ovals shaded contrastingly and containing the words: **"Auto-King."** Tires, tubes, fan belts, hose, tube repair sets, etc. Marshall-Wells Co., Duluth, Minn.
386,055. **Para-Lube.** Rubber softener with asphaltic base. C. P. Hall Co., Akron, O.
386,058. **Pink Garter.** Clothing. Revlon Products Corp., New York, N. Y.
386,059. **Scarlet Slipper.** Clothing. Revlon Products Corp., New York, N. Y.
386,080. **Rayoflight.** Tires and tubes. Goodyear Tire & Rubber Co., Akron, O.
386,086. **Corulyte.** Shoe fillers. General Tire & Rubber Co., Akron, O.
386,121. Representation of a shaded label containing the letter: **"P."** Tires. Pennsylvania Rubber Co., Jeannette, Pa.
386,127. Representation of an octagon containing the letter: **"P."** Tennis balls. Pennsylvania Rubber Co., Jeannette, Pa.
386,131. **Sentinel.** Medicinal preparation for use as an inhalant. Forest City Rubber Co., Cleveland, O.
386,141. **Child Craft.** Shoes. J. C. Penney Co., Wilmington, Del.
386,176. **Silent Grip.** Tires. General Tire & Rubber Co., Akron, O.

Market Reviews

CRUDE RUBBER

Commodity Exchange

TABULATED WEEK-END CLOSING PRICES ON THE NEW YORK MARKET

Futures	Apr. 26	May 31	June 7	June 14	June 21
		"New" Standard			
June	.....	22.12	21.95	21.10	21.25
July	22.48	22.12	21.95	21.10	21.25
Sept.	22.00	21.80	21.70	20.80	20.95
Dec.	21.68	21.25	21.45	20.65	20.95
Mar.	21.38	20.80	21.20	20.50	20.75
May	.....	.....	20.90	20.30	20.65
Volume per week (tons)	4,750	6,610	9,530	4,560	2,350

Action by the Government on June 21, under which rubber became virtually a federal monopoly, overshadowed all other developments last month. Anticipating the Government's move, the market ruled weaker. September futures (new contract), after closing at 21.80¢ per pound, held steady to close at 21.75¢ on June 20, and then receded to close at 20.95¢ on June 20. Under restrictive trading, September advanced to close at 21.25¢ on June 30.

Under government restrictive measures, covered in detail elsewhere in this issue, the Rubber Reserve Co., on June 23 became the sole buyer of crude rubber in the Far East for shipment to this country; consumption of rubber for civilian purposes will be curtailed; and ceilings on rubber prices are virtually assured. Following the Government's action, trading in rubber futures was suspended on June 23 and resumed on June 24, but only under severe restrictions which limited trading to liquidation of open positions and prohibited the opening of new positions. The daily limit of price fluctuations was reduced from 2¢ to ½¢ per pound. Total open interest in crude rubber, as of June 20, stood at 1,856 contracts. It was held that this system was less drastic than a forced immediate liquidation of all open contracts. Also under this arrangement the rubber futures market will remain open at least formally.

According to the International Rubber Regulation Committee, producing countries under the restriction plan undershipped their 100% permissible quota by 12,893 long tons during April. Net exports from countries in the scheme, except Thailand and French Indo-China, totaled 112,020 long tons in April, against 114,901 in March. For the first four months net exports amounted to 452,804 long tons, or 46,859 long tons below the permissible amount.

Crude rubber consumption in the United States of 71,187 long tons during May was near the all-time high of 71,374 long tons recorded in April. June consumption continued at a high rate; but government restrictions will cut the current high rate appreciably during the next six months.

It was reported that Brazil had banned exportation of certain important defense materials, including rubber, to all countries except the United States.

Another element of uncertainty was brought into the rubber supply picture with the entrance of Russia into the war on June 22 and the possibility of an extension of the conflict to the Pacific area.

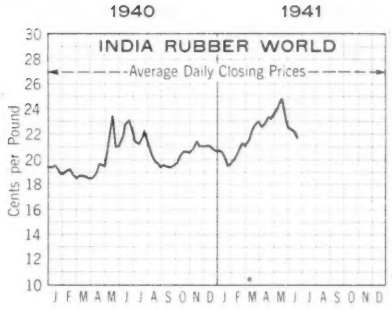
Reports said to have come from the Far East indicated that the sale of crude rubber to Japan by Netherland India might be discontinued at the end of 1941.

May shipments of automotive casings totaled 7,732,828 units, highest since June, 1932, when 10,064,495 units were shipped, according to the R.M.A.

New York Outside Market

The function of dealers and importers will be considerably altered under government control of purchasing. While at this writing no definite rules have yet been set forth, it is believed that private buyers will act as brokers for the Rubber Reserve Co., the only organization with an import license for rubber. Thus the dealer would retain his important distribution role, probably receiving a fixed fee for his services.

Provision has been made by the Government for the fulfillment of all contracts for the delivery of rubber made between private buyers and consumers before June 23. Last month activity in the outside market was quiet, with dealers and importers reluctant to offer rubber before a clarification of the Government's intentions. No latex was reported being offered, and material afloat was said to be contracted for several months ago. The market was easier, and No. 1-X ribbed smoked sheets, which closed at 22⅜¢ per pound on May 29, weakened to close at 21¾¢ per pound on June 23. Trading in free rubber continued after this date, with offerings at 22½¢ per pound for No. 1-X on June 26 and 22¼¢ per pound on June 30.



New York Outside Market—Spot No. 1-X Ribbed Smoked Sheets

New York Outside Market Rubber Quotations

Latex	June 26, 1940	May 27, 1941	June 26, 1941
Normal and concentrated (solid content) ....lb.	$0.27	$0.30/0.35	$0.30/0.35
Paras			
Upriver fine....lb.	.20¼	.37	.27½
Upriver fine....lb	*.22½	*.41	*.29½
Upriver coarse.lb.	.12	.17	.16
Upriver coarse.lb.	*.19	*.27	*.22
Islands fine....lb.	.18	.30	.27
Islands fine....lb.	*.22	*.40	*.29
Acre, Bolivian fine .....lb.	.20½	.38	.28
Acre, Bolivian fine .....lb.	*.23	*.42	*.30
Beni, Bolivian fine .....lb.	.21	.38	.28
Madeira fine...lb.	.20¼	.37	.27¾
Caucho			
Upper ball.....lb.	.12	.17	.16
Upper ball.....lb.	*.19	*.27	*.22
Lower ball.....lb.	.11½	.16	.15½
Pontianak			
Pressed block..lb.	.17½/.20	.14/.26	.15/.26
Guayule			
Ampar .....lb.	.15	.15½	.15½
Africans			
Rio Nuñez .. lb.	.18½	.19	.19
Black Kassai...lb.	.18½	.19	.19
Prime Niger flake .....lb.	.22½	.30	.28
Gutta Percha			
Gutta Siak ....lb.	.21/.22½	.18½	.18½
Gutta Soh .....lb.	.30	.29	.29
Red Macassar..lb.	1.20	1.20	1.35
Balata			
Block Ciudad Bolivar .....lb.	..	.47	.47
Manaos block..lb.	..	.50	.50
Surinam sheets.lb.	..	.52	.52
Amber .....lb.	..	.54	.54

* Washed and dried crepe. Shipments from Brazil.

New York Outside Market—Spot Closing Prices—Plantation Grades—Cents per Pound

	May 1941						June, 1941																	
	26	27	28	29	30*	31†	2	3	4	5	6	7†	9	10	11	12	13	14†	16	17	18	19	20	21¢
No. 1-X R.S.S. in cases	22⅞	22⅞	22⅝	22⅜	..	..	22⅛	22	22¼	22¼	22⅜	..	22½	22½	21⅛	21⅜	21⅝	..	21⅝	21⅝	21⅝	21⅜	21¾	..
No. 1 Thin Latex Crepe	24⅛	24⅛	23⅞	23⅝	..	..	23⅛	23¼	23½	23½	23⅝	..	23¾	23¾	23⅜	23	22⅞	..	22⅞	22⅞	22⅞	23	23	..
No. 2 Thick Latex Crepe	24⅛	24⅛	23⅞	23⅝	..	..	23⅛	23¼	23½	23½	23⅝	..	23¾	23¾	23⅜	23	22⅞	..	22⅞	22⅞	22⅞	23	23	..
No. 1 Brown Crepe	22⅝	22⅝	22⅜	22⅛	..	..	21⅞	21¾	22	22	22⅛	..	22¼	22¼	21⅞	21½	21⅜	..	21⅜	21⅜	21⅜	21½	21½	..
No. 2 Brown Crepe	22⅜	22⅜	22⅛	21⅞	..	..	21⅝	21½	21¾	21¾	21⅞	..	22	22	21⅝	21¼	21⅛	..	21⅛	21⅛	21⅛	21¼	21¼	..
No. 2 Amber	22⅝	22⅝	22⅜	22⅛	..	..	21⅞	21¾	22	22	22⅛	..	22¼	22¼	21⅞	21½	21⅜	..	21⅜	21⅜	21⅜	21½	21½	..
No. 3 Amber	22⅜	22⅜	22⅛	21⅞	..	..	21⅝	21½	21¾	21¾	21⅞	..	22	22	21⅝	21¼	21⅛	..	21⅛	21⅛	21⅛	21¼	21¼	..
Rolled Brown	21⅞	21⅞	21⅝	21⅜	..	..	21⅛	21	21¼	21¼	21⅜	..	21½	21½	21⅛	20¾	20⅝	..	20⅝	20⅝	20⅝	20¾	20¾	..

*Holiday. †Closed.

IMPORTS, CONSUMPTION, AND STOCKS

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks—Long Tons

Twelve Months	U.S. Imports*	U.S. Consumption†	U.S. Stocks Mfrs., Dealers, Importers, Etc.†¶	U.S. Stocks Afloat	U.K.—Public Warehouses London, Liverpool†‡	Singapore and Penang Dealers and Port Stocks†‡	World Net Exports‡	World Absorption‡c	World Stocks†‡§
1939	469,616	592,000	125,800	91,095	44,917a	15,299	988,600	1,110,383	447,666a
1940	818,624	648,500	288,864	145,950	.....	26,773	1,392,133	1,069,425	.....
1940									
Jan.	72,520	58,061	139,304b	90,285b	.....	35,928	129,557	106,073	.....
Feb.	43,088	52,078	129,023b	112,257b	.....	35,563	109,178	96,755	.....
Mar.	59,277	52,454	134,871b	113,619b	.....	23,830	99,954	102,282	.....
Apr.	70,700	52,361	152,645b	102,557b	.....	42,239	110,812	100,570	.....
May	51,571	54,513	148,881b	109,364b	.....	32,731	110,704	94,988	.....
June	53,889	47,834	154,313b	119,138b	.....	32,375	109,734	78,674	.....
July	69,596	48,354	175,455b	139,620b	.....	36,716	134,159	75,427	.....
Aug.	73,028	53,307	194,760b	141,286b	.....	40,395	118,498	80,371	.....
Sept.	78,972	52,469	220,597b	137,885b	.....	29,069	124,864	77,978	.....
Oct.	74,716	59,644	235,353b	166,837b	.....	33,613	124,918	87,216	.....
Nov.	72,901	57,716	250,412b	158,095b	.....	33,778	104,442	84,352	.....
Dec.	98,366	59,709	288,864b	145,950b	.....	26,773	115,313	84,739	.....
1941									
Jan.	86,833	65,989	309,411b	153,169b	.....	37,145	152,418	96,925	.....
Feb.	73,973	62,692	320,372b	136,955b	.....	46,913	98,759	89,216	.....
Mar.	87,123	69,024	338,147b	140,228b	.....	41,026	130,399	98,521	.....
Apr.	63,305	71,374	329,767b	153,487b	.....	.....	.....	.....	.....
May	101,404	71,187	359,393b	147,459b	.....	.....	.....	.....	.....

*Including liquid latex. †Stocks on hand the last of the month or year. ‡*Statistical Bulletin of the International Rubber Regulation Committee.* §Stocks at U. S. A., U. K., Singapore and Penang, Para, Manaos, regulated areas, and afloat. ¶Corrected to 100% from estimate of reported coverage. *a* Stocks as of Aug. 31, 1939. *b* Includes government emergency rubber. *c* Including producing countries.

FOR the second consecutive month the United States Rubber industry consumed more than 71,000 long tons of crude rubber, and for the five months ending with May, 1941, has utilized more crude rubber than during all of 1932 when consumption was 332,000 long tons, according to R.M.A. statistics. May consumption, 71,187 long tons, was slightly less than in April, but was 30.6% over May a year ago.

Imports for May, according to the Department of Commerce, were 101,404 long tons, a new high monthly record. April imports were only 63,305 long tons. Imports of latex included in this total amounted to 2,632 long tons, an increase compared with 1,593 tons in April, but not approaching earlier high records. The declared value per pound of rubber imported in May was 17.9¢, against 17.6¢ in April.

Domestic stocks, including Government reserves, totaled 359,393 long tons, the highest since July, 1934, and 9.0% over April and 142% above May, 1940. Stocks in the hands of the United States Government on May 31 were 186,804 long tons, 5% over April.

Stocks afloat for U. S. ports May 31 continued in the higher brackets, at 147,459 tons..

RECLAIMED RUBBER

ACCORDING to R. M. A. figures, May reclaimed rubber consumption is estimated at 21,353 long tons, 4.5% above the April figure; production, 22,775 long tons; and stocks on hand May 31, 35,921 long tons. The demand for reclaim during June was reported to be continuing at the high level of the previous month. Just how reclaimed rubber will fit into the new government rubber control system has not yet been revealed. Unless severe restrictions are imposed, a greater amount of reclaim in proportion to crude rubber may move into consumption. The market continues steady.

United States Reclaimed Rubber Statistics—Long Tons

Year	Production†	Consumption†	Consumption % of Crude	U. S. Stocks*†	Exports
1939	186,000	170,000	28.7	25,250	12,611
1940	208,971	190,244	29.3	32,636	11,347
1941					
Jan.	20,413	19,086	28.9	33,380	557
Feb.	19,507	18,222	29.1	33,654	1,009
Mar.	22,006	19,611	28.4	35,028	1,002
Apr.	21,574	20,427	28.6	35,336	....
May	22,775	21,353	30.0	35,921	....

*Stocks on hand the last of the month or year. †Corrected to 100% from estimates of reported coverage. *Compiled by The Rubber Manufacturers Association, Inc.*

New York Quotations

June 24, 1941

	Sp. Grav.	¢ per lb.
Auto Tire		
Black Select	1.16-1.18	6½/ 6¾
Acid	1.18-1.22	7¼/ 7¼
Shoe		
Standard	1.56-1.60	7 / 7¼
Tubes		
Red Tube	1.15-1.30	10¾/11¼
Compound	1.10-1.20	9¾/11¾
Miscellaneous		
Mechanical Blends	1.25-1.50	4½/ 5½
White	1.35-1.50	13½-14½

The above list includes those items or classes only that determine the price bases of all derivative reclaim grades. Every manufacturer produces a variety of special reclaims in each general group separately featuring characteristic properties of quality, workability, and gravity at special prices.

The United States Department of Commerce, Washington, D. C., in the interest of national and hemisphere defense will cease publishing detailed statistics concerning the country of destination of our exports.

RUBBER SCRAP

THE demand for scrap rubber continued active last month with reclaim production at near capacity levels. Collections of scrap were reported to be moving freely, and supplies available throughout the country are believed to be liberal. No report has yet been received regarding price advance limitations on scrap by the Government in connection with its recently inaugurated control of rubber. Several advances in price were registered in the various scrap classifications, with the exception of boots and shoes which hold steady.

Consumers' Buying Prices

(Carlot Lots for June 24, 1941)

Boots and Shoes	Prices
Boots and shoes, black.....lb.	$0.01⅜/$0.01½
Colored .....lb.	.01⅜/ .01¼
Untrimmed arctics .....lb.	.01⅜/ .01¼
Inner Tubes	
No. 1, floating .....lb.	.12 / .14
No. 2, compound .....lb.	.06¾/ .06⅞
Red .....lb.	.06½/ .06¾
Mixed tubes .....lb.	.05¼/ .05½
Tires (Akron District)	
Pneumatic Standard	
Mixed auto tires with beads .....ton	$16.50 /$17.00
Beadless .....ton	22.50
Auto tire carcass .....ton	55.00 /60.00
Black auto peelings.....ton	50.00 /52.00
Solid	
Clean mixed truck .....ton	37.00 /40.00
Light gravity .....ton	50.00 /52.00
Mechanicals	
Mixed black scrap.....ton	33.00 /34.00
Hose, air brake.....ton	25.00 /27.00
Garden, rubber covered..ton	12.00 /14.00
Steam and water, soft...ton	12.00 /14.00
No. 1 red.....lb.	.04½/ .04¾
No. 2 red.....lb.	.02½/ .02¾
White druggists' sundries...lb.	.04 / .04¼
Mixed mechanicals.....lb.	.02¾/ .03
White mechanicals.....lb.	.04¼/ .04½
Hard Rubber	
No. 1 hard rubber.....lb.	.15 / .16

Indies Terminals, Inc., recently was formed to handle rubber and tin shipments through Long Beach-Los Angeles (Calif.) Harbor. The new shipping agency, a subsidiary of the former Java-Pacific Line interests, will represent a large fleet of Dutch ships which are expected to go into operation at once. General manager of the company is Ralph Bennett.

COMPOUNDING INGREDIENTS

COMPOUNDING ingredients continued in active demand last month, with rubber manufacturing activity holding at record levels. There were three major developments which affected the market; government restrictions on rubber consumption, full priority control on zinc oxide, and an advance in carbon black prices. The government program calls for a reduction in the current rate of consumption of 817,000 tons per annum to a 600,000-ton annual rate for the last six months of 1941.

CARBON BLACK. Carbon black prices were advanced effective July 1. Beads and compressed black (rubber types), f.o.b. works, in bags, advanced to 3.35¢ per pound from 3.175¢ and, in bulk, to 3.15¢ from 3¢. Uncompressed material is now quoted at 3.425¢ per pound in bags, f.o.b. works. Demand continued heavy.

FACTICE OR RUBBER SUBSTITUTE. The demand continues active. Raw material oils have increased in price; this change caused substitute prices to become firm with advances on certain types reported.

LITHARGE. Movement into consumption held at a high level. Prices are steady.

LITHOPONE. The demand was heavy, with producers limiting sales. Prices are unrevised.

RUBBER CHEMICALS. The demand continued at a record high level last month. Although prices are generally firm and unchanged, several quotations have been revised downward.

RUBBER SOLVENTS. The demand in the rubber industry continued heavy. Prices have advanced ¼¢ to 1¢ per gallon for the various types of rubber grade naphthas.

TITANIUM PIGMENTS. Prices on pure titanium dioxide were advanced 1¢ per pound, effective July 1; while quotations on pigments with a barium, calcium, magnesium, or calcium-rutile base were increased ¼¢ per pound. The demand continued very active last month.

ZINC OXIDES. The demand continued heavy, and prices steady. Elsewhere in this issue, the recent government action placing zinc oxide under full priority control is discussed. During July producers of zinc oxide will be required to set aside 10% of May production, or approximately 1,500 tons. Late last month it was announced that the Metals Reserve Co. had purchased 100,000 long tons of concentrated zinc ores from the Aguilar mine in Argentina. These ores have a recoverable zinc metal content of about 42,500 long tons.

Current Quotations*

Abrasives

Pumicestone, powdered	*lb.*	$0.0325/$0.0425
Rottenstone, domestic	*lb.*	.025 / .03

Accelerators, Inorganic

Lime, hydrated, *l.c.l.*, New York	*ton*	20.00
Litharge (commercial)	*lb.*	.0825

*Prices in general are f.o.b. works. Range indicates grade or quantity variations. Space limitation prevents listing of known ingredients. Requests for information not recorded will receive prompt attention.

Accelerators, Organic

A-1	*lb.*	$0.24 /$0.30
A-10	*lb.*	.31 / .35
A-19	*lb.*	.52 / .65
A-32	*lb.*	.70 / .80
A-77	*lb.*	.42 / .55
A-100	*lb.*	.42 / .55
Accelerator 49	*lb.*	.41 / .42
531	*lb.*	.48 / .50
737	*lb.*	.42 / .43
737-50	*lb.*	.25 / .26
808	*lb.*	.70 / .72
833	*lb.*	1.15
Acrin	*lb.*	.60
Aldehyde ammonia	*lb.*	.65 / .70
Altax	*lb.*	.55 / .60
B-J-F	*lb.*	.50 / .55
Beutene	*lb.*	.70 / .75
Butyl Eight	*lb.*	.98 / 1.00
Zimate	*lb.*	1.75
C-P-B	*lb.*	2.00
Captax	*lb.*	.50
Crylene	*lb.*	
Paste	*lb.*	
D-B-A	*lb.*	2.00
Delac A	*lb.*	.40 / .50
O	*lb.*	.40 / .50
P	*lb.*	.40 / .50
Di-Esterex-N	*lb.*	.60 / .70
DOTG (Di-ortho-tolyguanidine)	*lb.*	.44 / .46
DPG (Diphenylguanidine)	*lb.*	.35 / .45
El-Sixty	*lb.*	.50 / .65
Ethylidene aniline	*lb.*	.42 / .43
Ethyl Zimate	*lb.*	1.75
Formaldehyde P.A.C.	*lb.*	.06
Formaldehyde-para-toluidine	*lb.*	.57 / .59
Formaniline	*lb.*	.31 / .32
Guantal	*lb.*	.40 / .50
Hepteen	*lb.*	.35 / .40
Base	*lb.*	1.35 / 1.50
Hexamethylenetetramine U.S.P.	*lb.*	.39
Technical	*lb.*	.33
Lead oleate, No. 999	*lb.*	.14
Witco	*lb.*	.15
Ledate	*lb.*	1.50
Monex	*lb.*	1.75
Novex	*lb.*	
O-X-A-F	*lb.*	.50 / .55
Oxynone	*lb.*	.77 / .90
Para-nitroso-dimethylaniline	*lb.*	.85
Pentex	*lb.*	1.00 / 1.10
Flour	*lb.*	.15 / .16
O	*lb.*	
Flour	*lb.*	
Phenex	*lb.*	.50 / .55
Pip-Pip	*lb.*	1.90
Pipsolene	*lb.*	1.55 / 1.80
R-23	*lb.*	.40
R & H 50-D	*lb.*	.42 / .43
Rotax	*lb.*	.60 / .65
Safex	*lb.*	1.20 / 1.30
Santocure	*lb.*	.80 / 1.00
Selenac	*lb.*	2.25
SPDX	*lb.*	.70 / .75
A	*lb.*	.70 / .75
Super sulphur No. 2	*lb.*	.14 / .16
Tetrone A	*lb.*	2.20
Thiocarbanilide	*lb.*	.24 / .30
Thionex	*lb.*	1.75
Thiurad	*lb.*	1.75
Trimene	*lb.*	.55 / .65
Base	*lb.*	1.05 / 1.20
Triphenylguanidine (TPG)	*lb.*	.45
Tuads	*lb.*	1.75
2-MT	*lb.*	.54
Ulto	*lb.*	1.25 / 1.50
Ureka	*lb.*	.60 / .75
Blend B	*lb.*	.60 / .75
C	*lb.*	.56 / .65
Vulcanex	*lb.*	.42 / .43
Vulcanol	*lb.*	.85
Z-B-X	*lb.*	2.50
Zenite	*lb.*	.46 / .48
A	*lb.*	.53 / .55
B	*lb.*	.46 / .48
Zimate (Methyl)	*lb.*	1.60

Activators

Aero Ac 50	*lb.*	.46 / .52
Barak	*lb.*	.50
MODX	*lb.*	.30 / .35
SL No. 20	*lb.*	.085 / .10

Age Resisters

AgeRite Alba	*lb.*	2.00
Gel	*lb.*	.57 / .59
Hipar	*lb.*	.65 / .67
Powder	*lb.*	.52 / .54
Resin	*lb.*	.52 / .54
D	*lb.*	.52 / .54
White	*lb.*	1.25 / 1.40
Akroflex C	*lb.*	.56 / .58
Albasan	*lb.*	.70 / .75
Aminox	*lb.*	.52 / .61
Antox	*lb.*	.56
Betanox	*lb.*	.52 / .61
Special	*lb.*	.65 / .74
B-L-E	*lb.*	.52 / .61
Powder	*lb.*	.65 / .74
B-X-A	*lb.*	.52 / .61
Copper Inhibitor X-872-A	*lb.*	$1.15
Flectol B	*lb.*	.52 /$0.65
H	*lb.*	.52 / .65
White	*lb.*	.90 / 1.15
M-U-F	*lb.*	1.50
Neozone (standard)	*lb.*	.63
A	*lb.*	.52 / .54
B	*lb.*	.63
C	*lb.*	.52 / .54
D	*lb.*	.52 / .54
E	*lb.*	.63
Oxynone	*lb.*	.77 / .90
Parazone	*lb.*	.68
Permalux	*lb.*	1.20
Santoflex B	*lb.*	.52 / .65
BX	*lb.*	.58 / .71
Santovar A	*lb.*	1.15 / 1.40
Solux	*lb.*	1.30
Stabilite	*lb.*	.52 / .54
Alba	*lb.*	.70 / .75
Thermoflex	*lb.*	1.20 / 1.15
A	*lb.*	.65 / .67
Tysonite	*lb.*	.16 / .165
V-G-B	*lb.*	.52 / .61

Alkalies

Caustic soda, flake, Columbia (400-*lb. drums*)	100 *lbs.*	2.70 / 3.55
liquid, 50%	100 *lbs.*	1.95
solid (700-*lb. drums*)	100 *lbs.*	2.30 / 3.15

Antiscorch Materials

A-F-B	*lb.*	.35 / .40
Antiscorch T	*lb.*	.90
Cumar RH	*lb.*	.10
E-S-E-N	*lb.*	.35 / .40
R-17 Resin (*drums*)	*lb.*	.10
RM	*lb.*	1.25
Retarder W	*lb.*	.36
Retardex	*lb.*	.45 / .48
U-T-B	*lb.*	.35 / .40

Antiseptics

Compound G-4	*lb.*	
G-11	*lb.*	

Antisun Materials

Heliozone	*lb.*	.23 / .24
S.C.R.	*lb.*	.33 / .35
Sunproof	*lb.*	.23 / .28
Jr.	*lb.*	.165 / .215

Blowing Agents

Ammonium Carbonate, lumps (500-*lb. drums*)	*lb.*	.0825
Unicel	*lb.*	.50

Brake Lining Saturant

B.R.T No. 3	*lb.*	.0165/ .0175

Colors

Black

Du Pont powder	*lb.*	.42 / .44
Lampblack (commercial), *l.c.l.*	*lb.*	.15

Blue

Du Pont Dispersed	*lb.*	.83 / 3.95
Powders	*lb.*	2.25 / 3.75
Heliogen BKA	*lb.*	
Toners	*lb.*	

Brown

Mapico	*lb.*	.11

Green

Chrome	*lb.*	.23
oxide (*freight allowed*)	*lb.*	.24
Du Pont Dispersed	*lb.*	.98 / 2.85
Powders	*lb.*	1.00 / 3.50
Guignet's (*bbls.*)	*lb.*	.70
Toners	*lb.*	

Orange

Du Pont Dispersed	*lb.*	.88 / 2.00
Powders	*lb.*	.88 / 2.75
Toners	*lb.*	

Orchid

Toners	*lb.*	

Pink

Toners	*lb.*	

Purple

Toners	*lb.*	

Red

Antimony Crimson, 15/17%	*lb.*	.30
R. M. P. No. 3	*lb.*	.48
Sulphur free	*lb.*	.52
R.M.P.	*lb.*	.52
Golden 15/17%	*lb.*	.28
7-A	*lb.*	.37
Z-2	*lb.*	.23
Cadmium, light (400-*lb. bbls.*)	*lb.*	.85 / .90
Du Pont Dispersed	*lb.*	.93 / 2.05
Powders	*lb.*	.285 / 1.65
Iron Oxide, *l.c.l.*	*lb.*	.06 / .11
Mapico	*lb.*	.0975
Rub-Er-Red (*bbls.*)	*lb.*	.0975
Toners	*lb.*	

White

Lithopone (*bags*)	*lb.*	$0.0385/ $0.0410
Albalith	*lb.*	.0385/ .0410
Astrolith (50-*lb. bags*)	*lb.*	.0385/ .0410
Azolith	*lb.*	.0385/ .0410
Titanium Pigments		
Ray-bar	*lb.*	.055 / .065
Ray-cal	*lb.*	.0525/ .0625
Rayox	*lb.*	.135 / .165
Titanolith (50-*lb. bags*)	*lb.*	.0525/ .055
Titanox-A	*lb.*	.145 / .175
B	*lb.*	.0575/ .0625
30	*lb.*	.0575/ .0625
C	*lb*	.055 / .06
M	*lb.*	.0575/ .0625
Ti-Tone	*lb.*	
Zopaque (50-*lb. bags*)	*lb.*	.145 / .155
Zinc Oxide		
Azo ZZZ-11	*lb.*	.065 / .0675
44	*lb.*	.065 / .0675
55	*lb.*	.065 / .0675
66	*lb.*	.08 / .0825
French Process, Florence		
Green Seal-8	*lb.*	.0825/ .0850
Red Seal-9	*lb.*	.0775/ .08
White Seal-7	*lb.*	.0875/ .09
Kadox, Black Label-15	*lb.*	.065 / .0675
No. 25	*lb.*	.0775/ .08
Red Label-17	*lb.*	.065 / .0675
Horse Head Special 3	*lb.*	.065 / .0675
XX Red-4	*lb.*	.065 / .0675
23	*lb.*	.065 / .0675
72	*lb.*	.065 / .0675
78	*lb.*	.065 / .0675
80	*lb.*	.065 / .0675
103	*lb.*	.065 / .0675
110	*lb.*	.065 / .0675
St. Joe (lead free)		
Black Label	*lb.*	.065 / .0675
Green Label	*lb.*	.065 / .0675
Red Label	*lb.*	.065 / .0675
U.S.P.	*lb.*	.0975/ .10
Zinc Sulphide Pigments		
Cryptone-BA-19	*lb.*	.0525/ .055
BT	*lb.*	.0525/ .055
CB	*lb.*	.0525/ .055
MS	*lb.*	.055 / .0575
ZS No. 20	*lb.*	.0775/ .08
86	*lb.*	.0775/ .08
230	*lb.*	.0775/ .08
800	*lb.*	.0775/ .08
Sunolith	*lb.*	.0385/ .0410

Yellow

Cadmolith (cadmium yellow), (400-*lb. bbls.*)	*lb.*	.60 / .65
Du Pont Dispersed	*lb.*	1.25 / 1.75
Powders	*lb.*	.135 / 1.37
Mapico	*lb.*	.0725
Toners	*lb.*	

Dispersing Agents

Bardex	*lb.*	.0395/ .042
Bardol	*lb.*	.0225/ .025
Darvan No. 1	*lb.*	.30 / .34
No. 2	*lb.*	.30 / .34
Nevoll (*drums, c.l.*)	*lb.*	.0225
Santomerse S	*lb.*	.11 / .25

Fillers, Inert

Asbestine, *c.l.*	*ton*	15.00
Barytes	*ton*	30.00 /36.00
f.o.b., St. Louis (50-*lb. paper bags*)	*ton*	22.85
off color, domestic	*ton*	21.50 /26.50
white, imported	*ton*	
Blanc fixe, dry, precip.	*lb.*	.0325/ .0375
Calcene	*ton*	37.50 /43.00
Infusorial earth	*lb.*	.025 / .03
Kalite No. 1	*ton*	24.00 /30.00
3	*ton*	34.00 /40.00
Kalvan	*ton*	95.00
Magnesia, calcined, heavy	*lb.*	
Magnesium Carbonate, *l.c.l.*	*lb.*	.0725/ .095
Paradene No. 2 (*drums*)	*lb.*	.045
Pyrax A	*ton*	7.00
Whiting		
Columbia Filler	*ton*	9.00 /14.00
Suprex, white extra light	*ton*	30.00
heavy	*ton*	30.00
Witco, *c.l.*	*ton*	7.00

Finishes

Black-Out (surface protective)	*gal.*	4.00 / 5.00
Mica, *l.c.l.*	*ton*	42.00 /52.00
Rubber lacquer, clear	*gal.*	1.00 / 2.00
colored	*gal.*	2.00 / 3.50
Shoe Varnish	*gal.*	1.45
Talc	*ton*	.025 / .03

Flock

Cotton flock, dark	*lb.*	.09 / .12
dyed	*lb.*	.40 / .80
white	*lb.*	.13 / .20
Rayon flock, colored	*lb.*	.90 / 1.50
white	*lb.*	.75 / 1.00

Latex Compounding Ingredients

A-342	*lb.*	1.00 / 1.25
Accelerator 85	*lb.*	.35
89	*lb.*	1.20
122	*lb.*	1.30
552	*lb.*	1.90
Aerosol OT Aqueous 10%	*lb.*	.125
Antox, dispersed	*lb.*	.42
Aquarex D	*lb.*	$0.75
F	*lb.*	.85
Special WA Paste	*lb.*	.28
Areskap No. 50	*lb.*	.18 /$0.24
100, dry	*lb.*	.39 / .51
Aresket No. 240	*lb.*	.16 / .22
300, dry	*lb.*	.42 / .50
Aresklene No. 375	*lb.*	.35 / .50
400, dry	*lb.*	.51 / .65
Black No. 25, dispersed	*lb.*	.22 / .40
Casein	*lb.*	.21
Collocarb	*lb.*	.06
Color Pastes, dispersed	*lb.*	.38 / 1.90
Copper Inhibitor X-872	*lb.*	2.25
Dispersex No. 15	*lb.*	.11 / .12
No. 20	*lb.*	.08 / .10
Factex Dispersion A	*lb.*	.16
Heliozone, dispersed	*lb.*	.25
Igepon A	*lb.*	
Latac	*lb.*	2.50
MICRONEX, Colloidal	*lb.*	.06 / .07
Nekal BX (dry)	*lb.*	
Pipsol X	*lb.*	3.05 / 3.55
R-2 Crystals	*lb.*	2.50 / 2.75
RN-2 Crystals	*lb.*	1.90 / 2.15
S-1 (400 *lb. drums*)	*lb.*	.65
Santobrite Briquettes	*lb.*	
Powder	*lb.*	
Santomerse D	*lb.*	.41 / .65
S	*lb.*	.11 / .25
Stablex A	*lb.*	.90 / 1.10
B	*lb.*	.65 / .90
C	*lb.*	.40 / .50
Sulphur, dispersed	*lb.*	.10 / .15
No. 2	*lb.*	.075 / .12
T-1 (440-*lb. drums*)	*lb.*	.40
Tepidone	*lb.*	.90
Vulcan Colors	*lb.*	
Zenite Special	*lb.*	.55
Zinc oxide, dispersed	*lb.*	.12 / .15

Mineral Rubber

Black Diamond, *l.c.*	*ton*	25.00
B.R.C. No. 20	*lb.*	.009 / .01
Hydrocarbon, hard	*ton*	25.00 /27.00
Genasco Hydrocarbon, granulated	*ton*	
solid	*ton*	
Gilsonite	*ton*	
Parmr	*ton*	25.00 /29.00
Pioneer, *c.l.*	*ton*	25.00
285°-300°	*ton*	25.00 /27.00

Mold Lubricants

Aluminum Stearate	*lb.*	.21 / .22
Aquarex D	*lb.*	.75
WA Paste	*lb.*	.25
Special	*lb*	.28
Lubrex	*lb.*	.25 / .30
Mold Paste	*lb.*	.12 / .18
Rubber-Glo, conc. regular	*gal.*	.94 / 1.15
Type W	*gal.*	.90 / 1.20
Sericite	*ton*	65.00 /75.00
Soapstone, *l.c.l.*	*ton*	25.00 /35.00

Oil Resistant

A-X-F	*lb.*	.82 / .85

Reclaiming Oils

B.R.V.	*lb.*	.032 / .0345
No. 1621	*lb.*	.019 / .02
S.R.O.	*lb.*	.019 / .02
X-159	*gal.*	.20 / .32
Rox No. 1	*lb.*	.0225/ .025

Reenforcers

Carbon Black		
Aerfloted Arrow Specification (*bags only*)	*lb.*	.0335‡
Arrow Compact Granulized	*lb.*	.0335‡
Certified Heavy Compressed (*bags only*)	*lb.*	.0335‡
Spheron	*lb.*	.0335‡
Continental, dustless	*lb.*	.0335‡
Compressed (*bags only*)	*lb.*	.0335‡
Disperso	*lb.*	.0335‡
Dixie	*lb.*	.0335‡
Dixiedensed	*lb.*	.0335‡
66	*lb.*	.0335‡
Excello, dustless	*lb.*	.0335‡
Furnex	*lb.*	
Beads	*lb.*	
Gastex	*lb.*	.03 / .07
Kosmobile	*lb.*	.0335‡
66	*lb.*	.0335‡
Kosmos	*lb.*	.0335‡
MICRONEX Beads	*lb.*	.0335‡
Mark II	*lb.*	.0335
Standard	*lb.*	.0335
W-5	*lb.*	.0335
W-6	*lb.*	.0335
P-33	*lb.*	.0475
Pelletex	*lb.*	.03 / .07
Supreme, dustless	*lb.*	.0335‡
Thermax	*lb.*	.0225
Velvetex	*lb.*	.04 / .06
"WYEX BLACK"	*lb.*	.0335‡
Carbonex Flakes	*lb.*	.029 / .034
S	*lb.*	.03 / .0350
Clays		
Aerfloted Paragon (50-*lb. bags*)	*ton*	10.00
Suprex (50-*lb. bags*)	*ton*	10.00
Barden	*ton*	$10.00
Catalpo, *c.l.*	*ton*	30.00
Clay "L"	*ton*	8.00
Chicora	*ton*	10.00
China	*ton*	22.50
Crown	*ton*	10.00
Dixie	*ton*	10.00
Hi-White	*ton*	10.00
Langford	*ton*	7.50
McNamee	*ton*	10.00
Par	*ton*	10.00
Paraforce, *c.l.*	*ton*	60.00
Witco, *c.l.*	*ton*	10.00
Cumar EX	*lb.*	.045
MH	*lb.*	.06 /$0.11
V	*lb.*	.09 / .12
Silene	*lb.*	.04 / .045

‡Price quoted is f.o.b. works (bags). The price f.o.b. works (bulk) is $0.0315 per pound. All prices are carlot.

Reodorants

Amora A	*lb.*	
B	*lb.*	
C	*lb.*	
D	*lb.*	
Curodex 19	*lb.*	
188	*lb.*	
198	*lb.*	
Para-Dors	*lb.*	
Rodo No. 0	*lb.*	3.50 / 4.00
10	*lb.*	4.50 / 5.00

Rubber Substitutes

Black	*lb.*	.08 / .13
Brown	*lb.*	.08 / .125
White	*lb.*	.085 / .135
Factice		
Amberex Type B	*lb.*	.1875
Brown	*lb.*	.09 / .115
Fac-Cel B	*lb.*	.1325
C	*lb.*	.1325
Neophax A	*lb.*	.129
B	*lb.*	.13
White	*lb.*	.10 / .135

Softeners and Plasticizers

B.R.T. No. 7	*lb.*	.0165/ .0175
Bondogen	*lb:*	.98 / 1.05
Burgundy pitch	*lo.*	
Copene Resin	*lb.*	.20
Cycline oil	*gal.*	.14 / .20
Dipolymer Oil	*gal.*	.35 / .40
Dispersing Oil No. 10	*lb.*	.0335/ .036
Nevinol	*lb.*	.13 / .14
Nuba resinous pitch (*drums*)		
Grades No. 1 and No. 2	*lb.*	.0265
3-X	*lb.*	.04
Nypene Resin	*lb.*	.0165
Palm oil (Witco), *c.l.*	*lb*	
Palmol	*lb.*	.13
Para Flux	*gal.*	.09 / .18
No. 2016	*gal.*	.125 / .20
Para Lube	*lb.*	.0425/ .048
Pine tar	*gal.*	
Oil	*gal.*	.30
Plastogen	*lb.*	.0775/ .08
Plastone	*lb.*	.27 / .30
R-19 Resin (*drums*)	*lb.*	.10
21 Resin (*drums*)	*lb.*	.10
Reogen	*lb.*	.12 / .18
RPA No. 1	*lb.*	.65
2	*lb.*	.65
3	*lb.*	.46
4	*lb.*	.80
Tackol	*lb.*	.085 / .18
Tonox	*lb.*	.52 / .61
Tonox D	*lb.*	.75 / .85
Witco No. 20, *l.c.l.*	*gal.*	.20
X-1 resinous oil (*tank car*)	*lb.*	.011

Softeners for Hard Rubber Compounding

Resin C, Pitch 45°C. M.P.	*lb.*	.013 / .014
60°C. M.P.	*lb.*	.013 / .014
75°C. M.P.	*lb.*	.013 / .014

Solvents

Beta-Trichlorethane	*lb.*	.20
Carbon Bisulphide	*lb.*	.05
Tetrachloride	*gal.*	.665
Cosol No. 1	*gal.*	.25 / .30
No. 2	*gal.*	.22 / .30
No. 3	*gal.*	.22 / .30
Industrial 90% benzol (*tank car*)	*gal.*	.14 / .21
Skellysolve	*gal.*	

Stabilizers for Cure

Calcium Stearate	*lb.*	.23 / .25
Laurex (*bags*)	*lb.*	.1175/ .1425
Lead Stearate	*lb*	.25
Stearex B	*lb.*	.13 / .14
Beads	*lb.*	.125 / .135
Stearic acid, single pressed	*lb.*	.13 / .14
Stearite, *c.l*	*lb.*	.125
Zinc stearate	*lb.*	.26 / .28

Synthetic Rubber

Neoprene Type E	*lb.*	.65
G	*lb.*	.70
GN	*lb.*	.65
I	*lb.*	.70
KN	*lb.*	.75
M	*lb.*	.65
Latex Type 56	*lb.*	.30
57	*lb.*	.30
Synthetic 100	*lb.*	.41

(*Continued on page 82*)

COTTON AND FABRICS

NEW YORK COTTON EXCHANGE WEEK-END CLOSING PRICES

Futures	Apr. 26	May 31	June 7	June 14	June 21
June	.....	13.10	13.43	.....	.....
July	11.15	13.08	13.41	13.94	14.34
Sept.	.....	13.18	13.51	14.06	14.48
Dec.	11.10	13.33	13.67	14.21	14.65
Mar.	11.17	13.29	13.67	14.29	14.75
May	.....	13.24	13.68	14.30	14.75

New York Quotations

June 24, 1941

Drills

38-inch 2.00-yard	yd.	$0.17⅜
40-inch 3.47-yard		.10⅝
50-inch 1.52-yard		.24⅜
52-inch 1.85-yard		.19⅞
52-inch 1.90-yard		.19⅜ / .20⅜
52-inch 2.20-yard		.19⅜
52-inch 2.50-yard		.17
59-inch 1.85-yard		.21

Ducks

38-inch 2.00-yard D. F.	yd.	.17⅜ / .18½
40-inch 1.45-yard S. F.		.23⅞
51½-inch 1.35-yard D. F.		.26⅝
72-inch 1.05-yard D. F.		.37½ / .38½
72-inch 17.21 ounce		.43⅝

Mechanicals

Hose and belting	lb.	.37

Tennis

51½-inch 1.35-yard	yd.	.27
51½-inch 1.60-yard	yd.	.23½
51½-inch 1.90 yard	yd.	.19½

Hollands

Blue Seal

20-inch	yd.	.12
30-inch		.21½
40-inch		.24

Gold Seal

20-inch No. 72	yd.	.12¾
30-inch No. 72		.22½
40-inch No. 72		.25½
50-inch No. 72		.30

Red Seal

20-inch	yd.	.11½
30-inch		.20¾
40-inch		.22½
50-inch		.33

Osnaburgs

40-inch 2.34-yard	yd.	.14½
40-inch 2.48-yard		.13¾
40-inch 2.56-yard		.12½
40-inch 3.00-yard		.11½
40-inch 7-ounce part waste		.14
40-inch 10-ounce part waste		.18¾
37-inch 2.42-yard		.14½

Raincoat Fabrics

Cotton

Bombazine 64 x 60	yd.	.12½
Plaids 60 x 48		.13½
Surface prints 64 x 60		.14¾
Print cloth, 38½-inch, 64 x 60		.09½

Sheetings, 40-Inch

48 x 48, 2.50-yard	yd.	$0.15
64 x 68, 3.15-yard		.12½
56 x 60, 3.60-yard		.11½
44 x 40, 4.25-yard		.09½

Sheetings, 36-Inch

48 x 48, 5.00-yard	yd.	.08
44 x 40, 6.15-yard		.06½

Tire Fabrics

Builder

17¼ ounce 60" 23/11 ply Karded peeler	lb.	.35

Chafer

14 ounce 60" 20/8 ply Karded peeler	lb.	.34½
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.34

Cord Fabrics

23/5/3 Karded peeler, 1 7/32" cotton	lb.	.35½
15/3/3 Karded peeler, 1 7/32" cotton	lb.	.33½
12/4/2 Karded peeler, 1 7/32" cotton	lb.	.32½
23/5/3 Karded peeler, 1¼" cotton	lb.	.41
23/5/3 Combed Egyptian	lb.	.54½

Leno Breaker

8¼ ounce and 10¼ ounce 60" Karded peeler	lb.	.37

FOLLOWING Presidential signature of the 85% parity loan bill late in May, the cotton market advanced sharply during June. The New York 1 1/16-inch spot middling price, after closing at 13.55¢ per pound on May 31, moved sharply up through June to close at 15.50¢ per pound on June 23. Thereafter the market was weaker, with the price closing at 15.33¢ on June 28. The recent firmness in cotton prices is believed to reflect in part the current tightness of actual fiber supplies being offered. It is expected that a large part of the 1941 crop will go into loan for holding in the anticipation of higher prices.

Consumption of cotton in domestic mills during May totaled 918,902 bales, against 920,142 in April and 641,636 in May, last year, according to the Census Bureau. For ten months of the cotton season the total was 7,914,140 bales, against 6,595,635 a year ago. At the end of May mill stocks were 1,927,939 bales, and stocks in public storage and at compresses were 11,358,417 bales.

Consumption of cotton in Great Britain this season is expected to be 2,110,000 bales and to drop to about 1,500,000 bales in the season beginning on August 1. In pre-war years Britain used between 2,500,000 and 3,000,000 bales annually.

There was some talk in Washington regarding the possibility of making compulsory government loans equal to 85% of parity a permanent feature of the Agricultural Adjustment Act.

Fabrics

The demand for fabrics continued active during the past month, but buyers experienced difficulty in placing orders for nearby delivery. The production of most mills is sold through the next four to six months and in some cases into the first quarter of 1942. There was some curtailment in production in the South, because of a power shortage, arising from extreme drouth conditions. It is reported that the Government was studying the possibility of establishing price ceilings on a wide range of fabrics.

The market advanced sharply during June, and all prices quoted here with one exception showed gains over quotations of the previous month. Prices were firm at the end of the month, with indications of further advances, barring governmental restraint.

Current Quotations

(*Continued from page* 80)

Tackifier

B.R.H. No. 2	lb.	$0.017 /$0.02

Vulcanizing Ingredients

Magnesia, light (for neoprene)	lb.	.25
Sulphur	100 lbs.	2.00
Chloride (*drums*)	lb.	.04
Telloy	lb.	1.75
Vandex	lb.	1.75

(See also Colors—Antimony)

Waxes

Carnauba, No. 3 chalky	lb.	.63
2 N.C.	lb.	.68
3 N.C.	lb.	.635
1 Yellow	lb.	.72 / .73
2	lb.	.71 / .72

World Net Imports of Crude Rubber—Long Tons

Year	U.S.A.	U.K.†	Argentine	Australia	Belgium	Canada	France	Greater Germany‡	Italy	Japan	Poland	Sweden	U.S.S.R.	Rest of World	Total
1938	406,300	168,172	7,700	12,300	11,300	25,700	58,100	107,900	28,200	46,300	7,900	8,300	26,800	49,200	928,000
1939	486,348	112,249¶	9,600	15,400	9,600	32,500	33,751§	62,344§	12,582§	42,300	5,415§	7,965*a*	14,000*	61,866	603,842¶
1940	810,724	....	10,019	19,044	1,585*b*	52,567	....	....	....	30,847*c*	....	....	....	....	....
1940															
Jan.	71,541	....	1,049	921	891	5,047	....	....	....	4,547	....	....	....	....	....
Feb.	41,797	....	565	1,846	694	3,508	....	....	....	5,243	....	....	....	....	....
Mar.	58,283	....	756	1,784	....	3,062	....	....	....	6,057	....	....	....	....	....
Apr.	70,135	....	606	1,612	....	3,096	..	....	....	2 000*	....	....	....	....	....
May	50,621	....	589	2,128	....	3,108	....	....	....	2,500*	....	....	....	....	....
June	53,266	....	543	1,181	....	1,062	....	....	....	3,000*	....	....	....	....	....
July	69,374	....	783	1,902	....	5,112	....	....	....	3,000*	....	....	....	....	....
Aug.	72,612	....	767	2,508	....	4,605	....	....	....	4,500*	....	....	....	....	....
Sept.	78,126	....	1,216	2,485	....	2,743	....	....	....	....	....	....	....	....	....
Oct.	74,400	....	1,000*	590	....	8,336	....	....	....	....	....	....	....	....	....
Nov.	72,775	....	1,181	1,366	....	5,451	....	....	....	....	....	....	....	....	....
Dec.	97,794	....	964	721	....	7,437	....	....	....	....	....	....	....	....	....
1941															
Jan.	86,541	....	706	1,065	....	6,290	....	....	....	....	....	....	....	....	....
Feb.	73,647	....	....	1,717	....	3,770	....	....	....	....	....	....	....	....	....

*Estimated. †U. K. figures show gross imports, not net imports. ‡Including imports of Austria and Czechoslovakia. ¶Up to Aug. 31, 1939, only. §Up to July 31, 1939, only. *a*Up to September 30, 1939. *b*Jan.-Feb. *c*Jan.-Aug. Source: *Statistical Bulletin of the International Rubber Regulation Committee.*

RELIABLE . . .

Now that industry is called upon to produce at maximum capacity and speed—reliability of the materials used in every manufacturing process assumes more importance than ever. For 96 years we have supplied reliable textiles to American Industries. Today, you will find the long-standing reliability of our industrial fabrics a time saver —a money saver—and a worry saver.

FOR INSTANCE:

Fabrics for the Rubber Industry

Rubber Engineers know that they can depend upon our hose and belting ducks—chafer fabrics—balloon cloths and sheetings to deliver reliable performance and to have the consistent uniformity so essential to mass production. This is true because for years our textile engineers have worked closely with the rubber industry to design and make fabrics especially suitable for its use.

WELLINGTON SEARS COMPANY

65 WORTH STREET, NEW YORK CITY

ESTABLISHED 1845

U. S. Crude and Waste Rubber Imports for 1941*

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Totals 1941	Totals 1940	Balata	Miscellaneous	Waste
Jan. .....tons	82,095	3,046	646	655	99	292	86,833	72,520	73	870	85
Feb.	70,335	1,968	656	535	170	309	73,973	43,088	82	709	66
Mar.	83,835	1,725	371	670	90	432	87,123	59,277	85	1,012	38
Apr.	61,403	1,166	117	205	44	370	63,305	70,700	66	799	14
May	96,972	2,380	185	1,432	75	360	101,404	51,571	50	782	110
Total 5 mos., 1941.....tons	394,640	10,285	1,975	3,497	478	1,763	412,638	.....	356	4,172	313
Total 5 mos., 1940.....tons	279,371	13,048	2,181	946	182	1,428	.....	297,156	484	2,800	513

Compiled from The Rubber Manufacturers Association, Inc., statistics.

United States Latex Imports

Year	Pounds (d.r.c.)	Value
1939	61,460,003	$10,467,552
1940	75,315,775	14,543,975
1941		
Jan.	4,892,860	1,019,741
Feb.	6,598,930	1,279,648
Mar.	3,822,583	774,225
Apr.	3,570,742	648,217

Data from United States Department of Commerce, Washington, D. C.

Shipments of Crude Rubber from Producing Countries—Long Tons

Year	Malaya including Brunei and Labuan	N.E.I.	Ceylon	India	Burma	North Borneo	Sarawak	Thailand	French Indo-China	Total	Philippines and Oceania	Liberia†	Nigeria (incl. Brit. Cameroons)	Other Africa	South America	Mexican Guayule	Grand Total
1939 ..	376,800	372,000	61,000	9,200	6,600	11,900	24,000	41,800	65,200	968,500	2,100*	5,400	2,800	6,600*	16,100	2,900	1,004,400
1940 ..	540,417	536,757	88,937	13,649	9,668	17,623	35,166	43,940	64,437	1,350,594	2,267*	7,223	2,907*	7,200*	17,601	3,974	1,391,766
1940																	
Jan. ..	26,229	54,148	7,698	839	833	1,858	2,256	5,722	5,238	104,821	185	1,191	147	600	1,550	389	108,883
Feb. ..	45,651	37,960	8,946	2,030	892	1,164	2,678	4,307	6,931	110,559	94	477	234	600	1,662	239	113,865
Mar. ..	47,885	41,619	5,305	1,070	871	1,050	3,526	3,111	3,551	107,988	178	548	343	600	1,482	346	111,485
Apr. ..	24,607	43,945	4,144	817	990	1,799	2,951	1,834	2,927	84,014	203	598	120	600	1,159	317	87,011
May ..	57,874	40,335	7,337	972	1,046	1,370	2,696	2,582	4,578	118,790	195	364	361	600	2,305	331	122,946
June ..	45,471	44,809	5,603	841	712	1,421	4,077	2,178	2,730	107,842	168	405	127	600	1,080	101	110,323
July ..	42,861	60,671	7,330	884	310	1,767	2,494	4,253	4,045	124,615	169	342	298	600	1,035	443	127,502
Aug. ..	45,872	46,631	8,139	994	75	1,593	2,640	4,545	7,337	117,776	285	308	328	600	1,233	327†	120,857
Sept. ..	58,892	44,032	9,985	1,258*	61	1,743	2,404	3,247	9,303	130,925	165	323	145	600	1,295	349	133,802
Oct. ..	52,767	50,139	8,127	1,332*	509	1,693	2,564	3,355	2,082	122,568	275	1,024	404	600	1,860	348	127,079
Nov. ..	36,045	37,117	5,623	1 331*	1,295	1,137	3,360	3 463	6,715	96,086	248	830	200*	600	1,513	392†	99,869
Dec. ..	56,263	35,351	10,700	1,331*	2,074	1,028	3,520	5,343	9,000	124,610	102	813	200*	600	1,427	392†	128,144
1941																	
Jan. ..	37,804	58,593	7,866	1,479*	955	2,085	2,445	2,137	9,058	122,422	250*	750*	200*	600	2,103	250*	126,575
Feb. ..	27,115	42,091	4,346	1,479*	1,022	1,686	2,922	4,137	1,995	86,793	200*	750*	200*	600	1,814	250*	90,607
Mar. ..	56,651	53,313	6,074	1,479*	1,285	1,154	3,726	5,712	6,286	135,680	200*	750*	200*	600	1,500*	250*	139,180

*Estimated. †Guayule rubber imports into U.S.A. provisional until export figures from Mexico are received. Source: *Statistical Bulletin of the International Rubber Regulation Committee.*

CLASSIFIED ADVERTISEMENTS

ALL CLASSIFIED ADVERTISING MUST BE PAID IN ADVANCE

GENERAL RATES	SITUATIONS WANTED RATES	SITUATIONS OPEN RATES
Light face type $1.00 per line (ten words)	Light face type 40c per line (ten words)	Light face type 75c per line (ten words)
Bold face type $1.25 per line (eight words)	Bold face type 55c per line (eight words)	Bold face type $1.00 per line (eight words)

Allow nine words for keyed address. *Replies forwarded without charge*

SITUATIONS WANTED

PRACTICAL RUBBER CHEMIST, 12 YEARS' EXPERIENCE COMpounding and processing for tires, mechanical and proofed goods, involving natural rubber and all synthetics. Also experienced with latex, airfoam sponge, and dipped goods. Ph.D. Have held supervisory positions. Location immaterial. Address Box No. 272, care of INDIA RUBBER WORLD.

CHEMIST WITH FIVE YEARS' EXPERIENCE WITH RUBBER proofing of all kinds and adhesives desires position in sales or technical sales work. Address Box No. 273, care of INDIA RUBBER WORLD.

CHEMIST—PRODUCTION MAN—YOUNG, ABLE COMPOUNDER. Solid factory experience processing natural, synthetic rubber. Can handle men. Experienced footwear, rollers, molded mechanicals, calendered goods, sponge, latex. Available short notice. Address Box No. 274, INDIA RUBBER WORLD.

YOUNG MAN WITH 12 YEARS' EXPERIENCE IN OPERATING molded tube department. Capable of taking full charge. Go anywhere. Address Box No. 277, care of INDIA RUBBER WORLD.

PRODUCTION EXECUTIVE AND CHEMIST, YOUNG, 10 YEARS' experience, desires production position where ability and experience can ease production problems of the management. Available on short notice. Eastern location. Address Box No. 280, care of INDIA RUBBER WORLD.

COMPOUNDER. SUPERINTENDENT. TEN YEARS' EXPERIENCE producing rubber and synthetic molded goods. Thorough knowledge compounding, processing, cost work, production, maintenance, personnel. Address Box No. 282, care of INDIA RUBBER WORLD.

RUBBER CHEMIST-PRODUCTION MAN—11 YEARS IN SUPERvisory position in a big European rubber plant. Knowledge of all phases of footwear, rubber threads, molded articles, soles, heels, production. Also experienced with tires, tubes, and latex. Good references. Address Box No. 283, care of INDIA RUBBER WORLD.

LATEX CHEMIST WITH 7 YEARS' EXPERIENCE IN U.S.A. and abroad. Research—development—production. Also buna and neoprene, synthetics and artificial rubber dispersions. Desires responsible position, location no object, now employed. Address Box No. 284, care of INDIA RUBBER WORLD.

RUBBER CHEMIST, NOW EMPLOYED. 3 YEARS' EXPERIENCE in research and compounding mechanical goods, sponge, neoprene, latex, reclaim, and adhesives. Excellent references. Address Box No. 289, care of INDIA RUBBER WORLD.

SUPERINTENDENT DESIRES NEW CONNECTIONS. CAPABLE also as technical superintendent and development engineer. 18 years' experience with large and small concerns manufacturing mechanical rubber goods, sponge and synthetic rubber products. Expert in use of reclaimed rubber and low-cost compounding. Address Box No. 290, care of INDIA RUBBER WORLD.

SITUATIONS WANTED (Continued)

RUBBER CHEMICAL ENGINEER, 24, M. CH.E. EXPERIENCED in research and development of latex. Compounding, concentrating, and sponge manufacturing. Address Box No. 291, care of INDIA RUBBER WORLD.

PRODUCTION MANAGER, SUPERINTENDENT, tires, tubes, mechanicals. Thorough knowledge all phases, compounding, processes, supervision, engineering. Good record of accomplishment. Address Box No. 294, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

MECHANIC, VERSATILE, EXPERIENCED IN EXtruded Rubber industry with ability to adapt his experience to Extruded Plastic field. Factory located in New York City with efficient mechanical and tool-making facilities. State age, experience in detail, and salary requirements. Address Box No. 275, care of INDIA RUBBER WORLD.

WANTED: SUPERINTENDENT FOR NIGHT SHIFT FOR SMALL New Jersey plant. Must be thoroughly practical man, well acquainted with press work and tubing, and able to break in new men personally. Good opportunity for man willing to start in small way and grow with small, aggressive firm. Address Box No. 276, care of INDIA RUBBER WORLD.

RUBBER CHEMIST AND PRODUCTION MAN EXPERIENCED IN production of latex goods, footwear, and mechanicals. Permanent position with long-established Canadian company. State all qualifications and apply to Box No. 281, care of INDIA RUBBER WORLD.

RUBBER CHEMIST, TO TAKE CHARGE OF SMALL PLANT WITH laboratory; experienced in mechanical goods. State all qualifications, references, salary, etc. Address Box No. 288, care of INDIA RUBBER WORLD.

FOREMAN WANTED FOR EASTERN FACTORY. MUST BE EXperienced transmission and conveyer belting, reliable and hustler. Give full details first reply. Address Box No. 292, care of INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES

WANTED—TO BUY, LEASE OR BUY CONTROLLING INTEREST in small rubber factory, two to four mills, calender, tubing machine, presses and auxiliary equipment, etc. Give full particulars. Address Box No. 279, care of INDIA RUBBER WORLD.

FOR SALE AT HUDSON, MASSACHUSETTS: ONE BRICK BUILDing equipped for the manufacture of rubber surface goods, including Impregnator, Churns, Spreaders, Mixing Mills, etc. Address Box No. 286, care of INDIA RUBBER WORLD.

(Advertisements continued on page 86)

Classified Advertisements

Continued

MACHINERY AND SUPPLIES FOR SALE

FOR SALE: 2—84" Heavy Duty Mills, also 1—60", 1—50", 1—36"; 12—30"x40", 2—38"x78" Hydraulic Presses; Several Hydraulic Pumps; also Mills, Calenders, Tubers, etc. CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York, N. Y.

FOR SALE: 1—TWO-ROLL WATER-COOLED RUBBER MILL, 6" & 8" dia. x 9" face; 75-foot Link-Belt Conveyer, 36" wide; Hydraulic Presses, Pumps and Accumulators, Rubber Mills, Mixers, Grinders, Pulverizers, etc. Send for latest bulletins. We buy your surplus equipment. STEIN EQUIPMENT CORP., 426 BROOME ST., NEW YORK CITY.

FOR SALE: 5—WERNER AND PFLEIDERER MIXERS, FROM LAB. to 200 gal. BRILL EQUIPMENT CORPORATION, 183 Varick Street, New York City.

FOR SALE: 1—4-ROLL 20x60" FARREL CALENDER; 1—3-ROLL 22x65" Birmingham Calender; 4—40" and 2—36" Mixing Mills; 5—30x30 Hydraulic Press, 10" rams; 1—10" Erie Strainer; 4 Allen Strainers, 7"; 2 Spreaders; 5 Jacketed Churns, 200-gallon size; 4 Plain Churns, 200-gallon size. Address Box No. 287, care of INDIA RUBBER WORLD.

FOR SALE: 100 H.P. SLIP RING MOTOR, 440 SPEED, VOLTAGE 220, amp. 290, 3 phase, 60 cycle, grids, controller, oil switch, complete, in good condition, $650.00. PEERLESS KEY-IMPERIAL MFG. CO., INC., 401 Mulberry St., Newark, N. J.

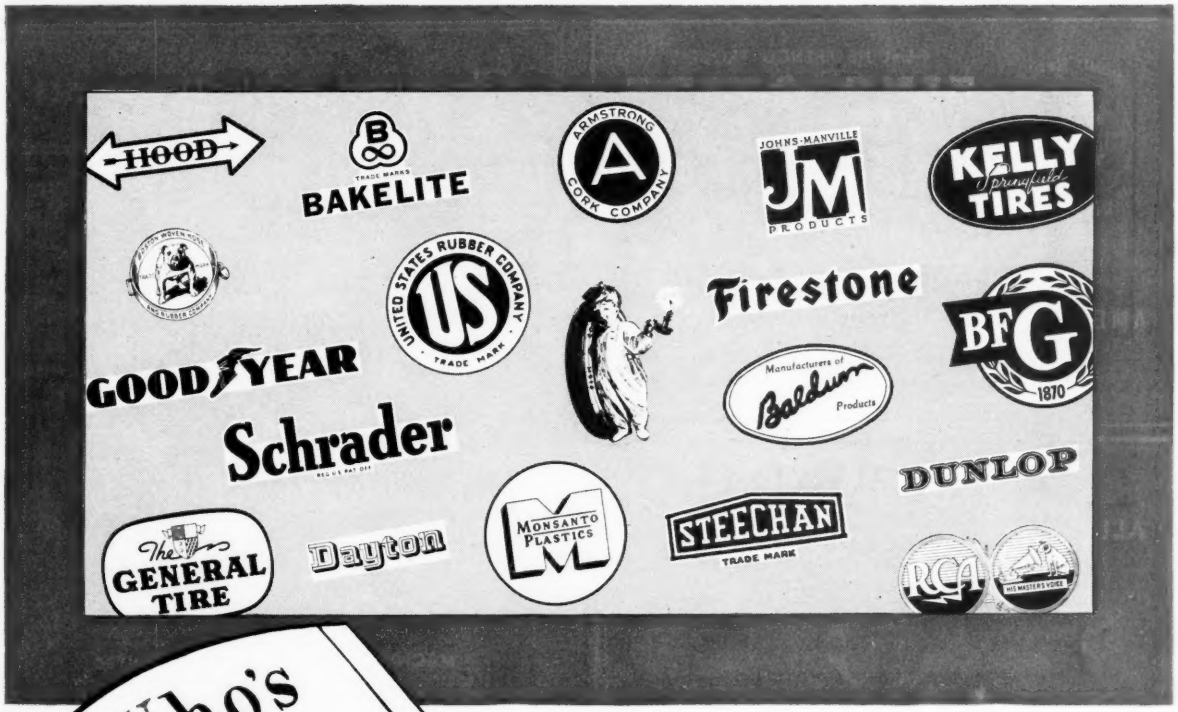
FOR SALE: 42" THROPP MILL WITH DRIVE, 50 H.P. GENERAL Electric motor. 24" heavy-duty Farrel refiner. No. 6 Housatonic tuber, 25 H.P. motor. 40' conveyer belt, Reeves drive. Now in operation manufacture of camelback. Private. EMPIRE RUBBER, 2125 Colonial Avenue, New York City.

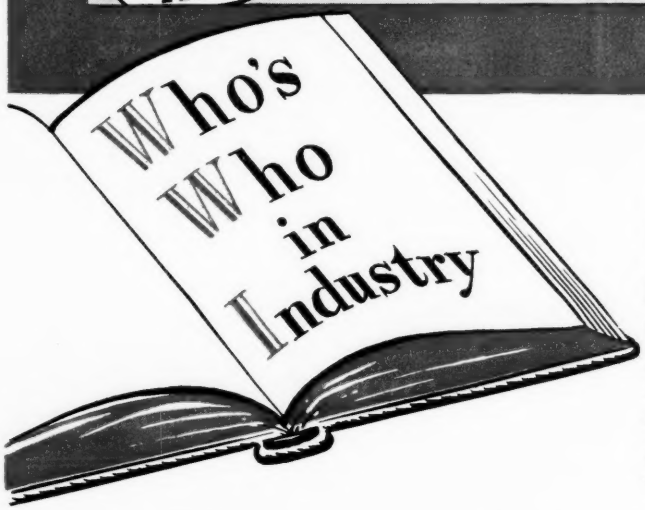
MACHINERY AND SUPPLIES WANTED

WANTED: *USED* EQUIPMENT TO FURNISH NEW RUBBER laboratory, including mill, tensile and abrasion testers, analytical balance, hydraulic press, ovens, torsion balance, etc. Address Box No. 278, care of INDIA RUBBER WORLD.

WANTED FOR USER: 1—NO. 3 OR NO. 9 BANBURY MIXER; 3—Mills; 1—Calender; 5—Hydraulic Presses, with pumps and accumulators; 2—Tubers. No dealers. Address Box No. 285, care of INDIA RUBBER WORLD.

WANTED: A NEW OR USED 12" RUBBER WASHER, FOR WASHing crude rubber. Address Box No. 293, care of INDIA RUBBER WORLD.





FOR 50 years the great names in Rubber, Chemical and Plastic have marched across the ledgers of L. Albert & Son. And the machinery that was the heart of many a vanished name in industry has been reconditioned by Albert . . . sent out again to throb as the heart of new and lusty plants that have grown into industrial empires covering world-wide markets.

Because L. Albert & Son maintains expert, highly skilled staffs, the most adequate facilities, and a systematic procedure approaching that of new machinery construction for its rebuilding operations . . .

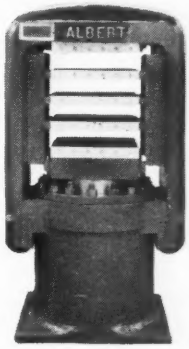
Because every machine that leaves our three plants has gone through the five proven steps of our rebuilding process . . .

Because Albert-rebuilt rubber and plastic machinery looks and performs like new, at a saving of 50% or more on the costs of new equipment . . .

Because Albert-rebuilt machinery enables you to "Save with Safety" . . .

Because Albert serves you quickly, efficiently and reliably . . .

THE GREAT NAMES OF INDUSTRY CONTINUE TO MARCH ACROSS THE LEDGERS OF L. ALBERT & SON —IN ITS FIFTIETH YEAR OF SERVICE.



L. ALBERT & SON

MAIN OFFICE AND PLANT TRENTON, N. J.

BRANCH OFFICES AND PLANTS: AKRON, OHIO • LOS ANGELES, CALIF. • BOSTON, MASS.

50 YEARS
Albert

Dominion of Canada Statistics

Imports of Crude and Manufactured Rubber

	April, 1941 Quantity	April, 1941 Value	Four Months Ended April, 1941 Quantity	Four Months Ended April, 1941 Value
UNMANUFACTURED				
Crude rubber, etc. ..... lb.	5,524,370	$1,235,022	35,484,317	$7,419,172
Latex (dry weight) ..... lb.	144,847	51,750	1,408,810	429,818
Gutta percha ..... lb.	.....	.....	8,367	5,420
Rubber, recovered ..... lb.	1,164,900	62,849	5,043,800	283,148
Rubber, powdered, and gutta percha scrap ..... lb.	428,800	7,616	1,691,000	35,278
Balata ..... lb.	1,930	407	12,940	3,114
Rubber substitute ..... lb.	69,800	22,822	171,000	48,719
Totals	7,334,647	$1,380,466	43,820,174	$8,224,669
PARTLY MANUFACTURED				
Hard rubber comb blanks	.....	$3,874	.....	$20,425
Hard rubber, n. o. s. ..... lb.	4,707	5,476	16,250	13,795
Rubber thread not covered . lb.	1,935	1,655	11,234	9,416
Totals	6,642	$11,005	27,484	$43,636
MANUFACTURED				
Bathing shoes ..... prs.	6,570	$1,356	21,746	$4,549
Belting	.....	23,621	.....	66,049
Hose	.....	18,458	.....	117,118
Packing	.....	9,751	.....	31,659
Boots and shoes ..... prs.	2,348	4,224	4,025	5,403
Canvas shoes with rubber soles ..... prs.	443	605	7,173	2,998
Clothing, including waterproofed	.....	2,197	.....	13,873
Raincoats ..... no.	7,162	24,914	17,281	55,826
Gloves ..... doz. prs.	1	100	608	1,828
Hot water bottles	.....	443	.....	954
Liquid sealing compound	.....	.....	.....	13,728
Tires, bicycle ..... no.	1,998	1,843	8,344	6,822
Pneumatic ..... no.	3,232	97,041	12,915	334,938
Solid for automobiles and motor trucks ..... no.	32	2,076	129	5,696
Other solid tires	.....	2,034	.....	6,002
Inner tubes ..... no.	2,221	8,655	10,159	35,063
Bicycle ..... no.	1,050	308	8,065	2,324
Mats and matting	.....	10,102	.....	48,388
Cement	.....	13,078	.....	45,870
Golf balls ..... doz. prs.	4,962	9,389	7,189	13,984
Heels ..... prs.	7,535	588	37,893	3,035
Other rubber manufactures ..	.....	243,625	.....	900,333
Totals	.....	$474,408	.....	$1,716,437
Totals, rubber imports ..	.....	$1,865,879	.....	$9,984,742

Exports of Domestic and Foreign Rubber Goods

	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
UNMANUFACTURED				
Crude rubber	$73	.....	$73	.....
Waste rubber	29,609	.....	73,175	.....
MANUFACTURED				
Belting	$32,989	.....	$133,334	.....
Bathing caps	206	.....	422	.....
Canvas shoes with rubber soles.	22,974	.....	92,160	.....
Boots and shoes	90,344	.....	488,771	.....
Clothing, including waterproofed	21,294	.....	73,600	.....
Heels	1,782	.....	4,745	.....
Hose	139,703	.....	690,806	.....
Soles	817	.....	3,260	.....
Soling slabs	284	.....	2,805	.....
Tires, pneumatic	393,296	.....	1,412,818	.....
Not otherwise provided for.	53,689	.....	351,312	.....
Inner tubes	45,458	.....	165,355	.....
Other rubber manufactures ..	22,223	.....	111,217	.....
Totals	$825,059	.....	$3,530,605	.....
Totals rubber exports ...	$854,741	.....	$3,603,853	.....

United States Statistics

Imports for Consumption of Crude and Manufactured Rubber

	—March, 1941— Quantity	Value	Three Months Ended —March, 1941— Quantity	Value
UNMANUFACTURED—*Free*				
Liquid latex (solids) ..... *lb.*	3,822,583	$774,225	15,314,373	$3,073,614
Jelutong or pontianak ..... *lb.*	1,602,243	258,514	4,874,770	726,157
Balata ..... *lb.*	79,868	16,147	298,300	71,847
Gutta percha ..... *lb.*	271,645	38,278	1,290,494	223,003
Guayule ..... *lb.*	953,100	98,187	2,588,600	268,257
Scrap and reclaimed ..... *lb.*	1,508,155	29,364	2,726,287	60,298
Crepe soled rubber ..... *lb.*	45,739	10,101	142,906	31,755
Totals	8,283,333	$1,224,816	27,235,730	$4,454,931
Misc. rubber (above), 1,000 *lbs.*	8,283	$1,224,816	27,236	$4,454,931
Crude rubber ..... 1,000 *lbs.*	190,389	34,030,846	537,459	95,871,081
Totals ..... 1,000 *lbs.*	198,663	$35,255,662	564,695	$100,326,012
Chicle, crude ..... *lb.*	2,070,376	$826,879	7,124,200	$2,709,279
MANUFACTURE—*Dutiable*				
Rubber tires ..... *no.*	776	$20,957	2,540	$59,695
Rubber boots, shoes and overshoes ..... *prs.*	3,156	800	10,045	3,015
Rubber soled footwear with fabric uppers ..... *prs.*	86,112	20,246	338,033	65,255
Golf balls ..... *no.*	55,536	7,149	95,568	11,063
Lawn tennis balls ..... *no.*	55,104	6,169	88,344	10,060
Other rubber balls ..... *no.*	65,880	3,305	1,022,201	18,755
Other rubber toys	.....	1,494	.....	4,704
Hard rubber combs ..... *no.*	.....	.....	.....	.....
Other manufactures of hard rubber	.....	7	.....	7
Friction or insulating tape .. *lb.*	273	267	5,417	2,791
Belts, hose, packing, and insulating material	.....	566	.....	9,572
Druggists' sundries of soft rubber	.....	225	.....	1,191
Inflatable swimming belts, floats, etc. ..... *no.*	42,023	4,464	120,522	12,114
Other rubber and gutta percha manufactures	.....	4,800	.....	30,280
Totals	.....	$70,449	.....	$228,502

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber ..... *lb.*	736,368	$163,375	2,122,051	$445,523
Balata ..... *lb.*	39,054	15,300	82,697	34,405
Other rubber, rubber substitutes and scrap ..... *lb.*	.....	.....	13,166	3,734
Rubber manufactures (including toys)	.....	9,807	.....	45,824
Totals	.....	$188,482	.....	$529,486

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed ..... *lb.*	2,289,203	$123,872	5,842,835	$310,804
Scrap ..... *lb.*	5,982,972	98,354	23,259,069	350,570
Cements ..... *gal.*	31,957	32,808	91,181	95,153
Rubberized auto cloth .. *sq. yd.*	34,066	13,337	79,806	37,970
Other rubberized piece goods and hospital sheetings .. *sq. yd.*	424,204	254,012	972,356	526,449
Boots ..... *prs.*	8,076	19,347	30,382	73,650
Shoes ..... *prs.*	27,539	18,223	66,282	40,453
Canvas shoes with rubber soles ..... *prs.*	85,114	65,804	188,674	145,371
Soles ..... *doz. prs.*	2,703	9,371	8,303	22,277
Heels ..... *doz. prs.*	26,008	14,575	79,343	42,614
Soling and top lift sheets .. *lb.*	65,754	12,041	103,690	22,648
Gloves and mittens .. *doz. prs.*	11,578	23,667	28,970	61,045
Water bottles and fountain syringes ..... *no.*	34,967	12,180	112,111	36,390
Other druggists' sundries	.....	110,946	.....	258,495
Gum rubber clothing .... *doz.*	17,347	59,486	44,104	119,247
Balloons ..... *gross*	18,621	14,682	54,129	40,519
Toys and balls	.....	12,001	.....	25,095
Bathing caps ..... *doz.*	3,416	6,449	11,807	22,590
Bands ..... *lb.*	13,817	6,074	32,674	15,015
Erasers ..... *lb.*	19,126	10,064	67,495	38,456
Hard rubber goods				
Electrical battery boxes .. *no.*	20,068	16,797	90,599	69,711
Other electrical ..... *lb.*	30,889	12,552	152,566	43,646
Combs, finished ..... *doz.*	15,003	8,533	59,304	32,648
Other hard rubber goods	.....	26,603	.....	74,343
Tires				
Truck and bus casings .. *no.*	72,768	1,634,415	204,529	4,604,048
Other auto casings .... *no.*	66,901	1,073,824	178,751	2,483,503
Tubes, auto ..... *no.*	125,374	322,011	295,587	710,795
Other casings and tubes .. *no.*	20,599	175,786	60,352	443,940
Solid tires for automobiles and motor trucks .... *no.*	451	19,000	1,394	35,785
Other solid tires ..... *lb.*	18,651	6,548	37,936	11,184
Tire sundries and repair materials ..... *lb.*	215,173	63,820	725,818	206,088
Rubber and friction tape .. *lb.*	74,756	20,169	184,481	53,137
Fan belts for automobiles . *lb.*	41,095	20,928	100,848	50,523
Other rubber and balata belts ..... *lb.*	287,404	179,535	879,014	493,096
Garden hose ..... *lb.*	774,246	353,847	846,674	369,266
Other hose and tubing .... *lb.*	.....	.....	1,027,398	453,772
Packing ..... *lb.*	128,795	60,036	368,097	168,827
Mats, matting, flooring, and tiling ..... *lb.*	135,650	17,885	369,170	49,073
Thread ..... *lb.*	28,015	26,481	107,647	92,062
Gutta percha manufactures . *lb.*	64,575	25,232	159,239	58,300
Latex (d.r.c.) and rubber sheets processed for further manufacture ..... *lb.*	81,044	16,036	300,976	59,842
Synthetic rubber (bulk) .... *lb.*	117,828	70,672	309,505	168,175
Other rubber manufactures ..	.....	183,092	.....	499,531
Totals	.....	$5,251,095	.....	$13,516,106